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*DB=USPT,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ*

<u>L4</u>	12 or L3	6	<u>L4</u>
<u>L3</u>	cc-?-Omt	1	<u>L3</u>
<u>L2</u>	cc-?-Ot or cch-?Cf? or ecch-?cf? or dc-?-T or cczc-?-T or dc-v2-T or czc-?-T	5	<u>L2</u>
<u>L1</u>	us-5328642-\$.did. or us-5397505-\$.did. or us-5480581-\$.did. or us-5723682-\$.did. or us-5209868-\$.did. or us-5643495-\$.did. or de-4023107-\$.did. or de-4123389-\$.did.	15	<u>L1</u>

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## Search Results - Record(s) 1 through 6 of 6 returned.

☐ 1. Document ID: US 6465059 B1

L4: Entry 1 of 6

File: USPT

Oct 15, 2002

DOCUMENT-IDENTIFIER: US 6465059 B1

TITLE: Liquid-crystalline medium

### Detailed Description Paragraph Table (1):

CCH-301 10.00% S.fwdarw.N [.degree. C.] <-40 CCH-501 11.00% Clearing point [.degree. C.] +94.5 CCH-34 4.00% .DELTA.n [589 nm, 20.degree. C.] +0.0600 CC-5-V 15.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-2F.F.F 8.00% Twist [.degree.] 90 CDU-2-F 4.00% V.sub.10 [V] 2.26 CDU-3-F 5.00% CCZU-2-F 5.00% CCZU-3-F 3.00% CCZU-5-F 5.00% CCPC-33 4.00% CCPC-34 5.00% CCPC-35 4.00% CCOC-3-3 3.00% CCOC-4-3 4.00% CCOC-3-5 2.00% CCH-5CF3 8.00%

### Detailed Description Paragraph Table (2):

CCH-34 5.00% S.fwdarw.N [.degree. C.] <-40 CC-5-V 12.00% Clearing point [.degree. C.] +79.0 CCH-5CF3 8.00% .DELTA.n [589 nm, 20.degree. C.] +0.0648 CCP-2F.F.F 12.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-3F.F.F 11.00% Twist [.degree.] 90 CCP-5F.F.F 6.00% V.sub.10 [V] 1.55 CCP-20CF3.F 10.00% CCP-50CF3.F 5.00% CCP-40CF3 6.00% CDU-2-F 6.00% CDU-3-F 10.00% CCOC-3-3 3.00% CCOC-4-3 4.00% CCOC-3-5 2.00%

### Detailed Description Paragraph Table (3):

CCH-34 5.00% S.fwdarw.N [.degree. C.] <-40 CC-5-V 14.00% Clearing point [.degree. C.] +78.5 CCH-5CF3 8.00% .DELTA.n [589 nm, 20.degree. C.] +0.0650 CCP-2F.F.F 11.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-3F.F.F 12.00% Twist [.degree.] 90 CCP-5F.F.F 5.00% V.sub.10 [V] 1.57 CCP-20CF3.F 9.00% CCP-50CF3.F 5.00% CCP-40CF3 7.00% CDU-2-F 6.00% CDU-3-F 10.00% CCOC-3-3 3.00% CCOC-4-3 5.00%

### Detailed Description Paragraph Table (4):

CCH-34 5.00% S.fwdarw.N [.degree. C.] <-40 CC-5-V 6.00% Clearing point [.degree. C.] +80.5 CCH-3CF3 6.00% .DELTA.n [589 nm, 20.degree. C.] +0.0644 CCH-5CF3 8.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-2F.F.F 11.00% Twist [.degree.] 90 CCP-3F.F.F 12.00% V.sub.10 [V] 1.56 CCP-5F.F.F 5.00% CCZU-2-F 5.00% CCZU-3-F 15.00% CCZU-5-F 4.00% CCP-20CF3.F 10.50% CCP-40CF3 6.50% CCOC-4-3 4.00% CCOC-3-3 2.00%

### Detailed Description Paragraph Table (5):

CCH-34 6.00% S.fwdarw.N [.degree. C.] <-40 CCH-3CF3 3.00% Clearing point [.degree. C.] +75.0 CCH-5CF3 8.00% .DELTA.n [589 nm, 20.degree. C.] +0.644 CCP-2F.F.F 11.00% .DELTA..epsilon. [1 kHz, 20.degree. C.] +10.1 CCP-3F.F.F 10.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.0 CCP-5F.F.F 6.00% Twist [.degree.] 90 CCP-20CF3.F 4.00% V.sub.10 [V] 1.34 CCP-40CF3 8.00% CDU-2-F 10.00% CDU-3-F 12.00% CDU-5-F 10.00% CCOC-3-3 4.00% CCOC-4-3 8.00%

### Detailed Description Paragraph Table (6):

CCH-34 5.00% Clearing point [.degree. C.] +80.0 CC-5-V 8.00% .DELTA.n [589 nm, 20.degree. C.] +0.0642 CCH-3CF3 6.00% .DELTA..epsilon. [1 kHz, 20.degree. C.] +7.8 CCH-5CF3 8.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-2F.F.F 11.00% Twist [.degree.] 90 CCP-3F.F.F 11.00% V.sub.10 [V] 1.58 CCP-5F.F.F 6.00% CCZU-2-F 6.00% CCZU-3-F 14.00% CCZU-5-F 6.00% CCP-20CF3.F 8.00% CCP-40CF3 4.00% CCOC-3-3 5.00% CCOC-4-3 2.00%

Detailed Description Paragraph Table (9):

CCH-34 5.00% S.fwdarw.N [.degree. C.] <-40 CC-5-V 8.00% Clearing point [.degree. C.] +80.5 CCH-3CF3 6.00% .DELTA.n [589 nm, 20.degree. C.] +0.0643 CCH-5CF3 8.00% .DELTA..epsilon. [1 kHz, 20.degree. C.] +7.8 CCP-2F.F.F 11.00% d..multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-3F.F.F 11.00% Twist [.degree.] 90 CCP-5F.F.F 6.00% V.sub.10 [V] 1.59 CCZU-2-F 5.00% CCZU-3-F 15.00% CCZU-5-F 5.00% CCP-20CF3.F 8.00% CCP-40CF3 5.00% CCOC-4-3 5.00% CCOC-3-3 2.00%

Detailed Description Paragraph Table (10):

CCH-34 5.00% S.fwdarw.N [.degree. C.] <-40 CC-5-V 6.00% Clearing point [.degree. C.] +80.0 CCH-3CF3 6.00% .DELTA.n [589 nm, 20.degree. C.] +0.0648 CCH-5CF3 6.00% .DELTA..epsilon. [1 Khz, 20.degree. C.] +8.0 CCP-2F.F.F 12.00% d..DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-3F.F.F 11.00% Twist [.degree.] 90 CCP-5F.F.F 6.00% V.sub.10 [V] 1.54 CCP-20CF3.F 8.00% CCP-50CF3.F 8.00% CCP-40CF3 6.00% CDU-2-F 6.00% CDU-3-F 8.00% CCOC-3-3 4.00% CCOC-4-3 8.00%

Detailed Description Paragraph Table (11):

CCH-34 5.00% Clearing point [.degree. C.] +80.0 CC-5-V 12.00% .DELTA.n [589 nm, 20.degree. C.] +0.0644 CCH-3CF3 5.00% d..DELTA.n [20.degree. C.] [.mu.m] 0.50 CCH-5CF3 8.00% Twist [.degree.] 90 CCP-2F.F.F 12.00% V.sub.10 [V] 1.63 CCP-3F.F.F 11.00% CCP-5F.F.F 6.00% CCP-20CF3.F 8.00% CCP-50CF3.F 3.00% CCP-40CF3 8.00% DCZG-2-OT 4.00% DCZG-3-OT 4.00% DCZG-5-OT 6.00% CCOC-3-3 2.00% CCOC-4-3 6.00%

Detailed Description Paragraph Table (12):

CCH-34 5.00% S.fwdarw.N [.degree. C.] <-40.0 CC-5-V 6.00% Clearing point [.degree. C.] +80.5 CCH-3CF3 6.00% .DELTA.n [589 nm, 20.degree. C.] +0.0654 CCH-5CF3 8.00% d..DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-2F.F.F 12.00% Twist [.degree.] 90 CCP-3F.F.F 11.00% V.sub.10 [V] 1.53 CCP-5F.F.F 6.00% CCZU-2-F 5.00% CCZU-3-F 14.00% CCZU-5-F 5.00% CCP-20CF3.F 9.00% CCP-40CF3 7.00% CCOC-3-3 4.00% CCOC-4-3 2.00%

Detailed Description Paragraph Table (13):

CCH-34 4.00% S.fwdarw.N [.degree. C.] <-40 CC-3-DT 12.00% Clearing point [.degree. C.] +81.0 CCH-5CF3 8.00% .DELTA.n [589 nm, 20.degree. C.] +0.0647 CCP-2F.F.F 12.00% d..DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-3F.F.F 11.00% Twist [.degree.] 90 CCP-5F.F.F 6.00% V.sub.10 [V] 1.53 CCZU-2-F 4.00% CCZU-3-F 10.00% CCZU-5-F 4.00% CCP-20CF3.F 8.00% CCP-50CF3.F 6.00% CCP-40CF3 7.00% CCOC-4-3 5.00% CCOC-3-3 3.00%

Detailed Description Paragraph Table (14):

CCH-34 5.00% CCH-35 4.00% CC-3-V1 12.00% CC-5-V 17.00% CCH-3CF3 4.00% CCH-5CF3 8.00% CCP-2F.F.F 10.00% CCZU-2-F 5.00% CCZU-3-F 12.00% CCZU-5-F 5.00% CCOC-3-3 3.00% CCOC-4-3 4.00% CCOC-3-5 2.00% CH-43 3.00% CH-33 3.00% CH-35 3.00%

Detailed Description Paragraph Table (15):

CCH-34 5.00% CC-3-V1 13.00% CC-5-V 14.00% CC-3-DT 13.00% CCH-5CF3 6.00% CCP-2F.F.F 10.00% CCP-5F.F.F 3.00% CCP-40CF3 4.00% CCZU-2-F 5.00% CCZU-3-F 6.00% CCZU-5-F 5.00% CCOC-3-3 3.00% CCOC-4-3 4.00% CH-43 3.00% CH-33 3.00% CH-35 3.00%

Detailed Description Paragraph Table (16):

CCH-34 5.00% CC-3-V1 12.00% CC-5-V 17.00% CCH-3CF3 8.00% CCH-5CF3 8.00% CCP-2F.F.F 11.00% CCP-5F.F.F 3.00% CCP-40CF3 2.00% CCZU-2-F 5.00% CCZU-3-F 7.00% CCZU-5-F 6.00% CCOC-3-3 3.00% CCOC-4-3 4.00% CH-43 3.00% CH-33 3.00% CH-35 3.00%

Detailed Description Paragraph Table (17):

CCH-34 5.00% S.fwdarw.N [.degree. C.] <-40 CC-5-V 12.00% Clearing point [.degree. C.] +79.0 CCH-5CF3 8.00% .DELTA.n [589 nm, 20.degree. C.] +0.0648 CCP-2F.F.F 12.00% d..DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-3F.F.F 11.00% Twist [.degree.] 90 CCP-5F.F.F 6.00% V.sub.10 [V] 1.55 CCP-20CF3.F 10.00% CCP-50CF3.F 5.00% CCP-40CF3 6.00% CDU-2-F 6.00% CDU-3-F 10.00% CCOC-3-3 3.00% CCOC-4-3 4.00% CCOC-4-5 2.00%

Detailed Description Paragraph Table (18):

CCH-34 5.00% S.fwdarw.N [.degree. C.] <-40 CC-5-V 11.00% Clearing point [.degree. C.] +79.5 CCH-5CF3 8.00% .DELTA.n [589 nm, 20.degree. C.] +0.0653 CCP-2F.F.F 12.00% d..DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-3F.F.F 11.50% Twist [.degree.] 90 CCP-5F.F.F 5.50% V.sub.10 [V] 1.54 CCP-20CF3.F 11.00% CCP-50CF3.F 7.00% CCP-40CF3

5.00% CDU-2-F 7.00% CDU-3-F 8.00% CCOC-3-3 3.00% CCOC-4-3 4.00% CCOC-4-5 2.00%

Detailed Description Paragraph Table (19):

CCH-34 5.00% S.fwdarw.N [.degree. C.] <-40 CC-5-V 6.00% Clearing point [.degree. C.] +80.5 CCH-3CF3 6.00% .DELTA.n [589 nm, 20.degree. C.] +0.0644 CCH-5CF3 8.00% d..DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-2F.F.F 11.00% Twist [.degree.] 90 CCP-3F.F.F 12.00% V.sub.10 [V] 1.56 CCP-5F.F.F 5.00% CCZU-2-F 5.00% CCZU-3-F 15.00% CCZU-5-F 4.00% CCP-20CF3.F 10.50% CCP-40CF3 6.50% CCOC-4-3 4.00% CCOC-3-3 2.00%

Detailed Description Paragraph Table (25):

CCH-301 10.00% S.fwdarw.N [.degree. C.] <-40 CCH-501 14.00% Clearing point [.degree. C.] +95.5 CCH-34 5.00% .DELTA.n [589 nm, 20.degree. C.] +0.0609 CC-5-V 9.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCH-5CF3 6.00% Twist [.degree.] 90 CCP-2F.F.F 9.00% V.sub.10 [V] 2.22 CCP-3F.F.F 5.00% CCP-5F.F.F 4.00% CDU-3-F 7.00% CCZU-2-F 3.00% CCZU-3-F 6.00% CCPC-33 4.00% CCPC-34 4.00% CCPC-35 4.00% CCOC-3-3 3.00% CCOC-4-3 5.00% CCOC-3-5 2.00%

Detailed Description Paragraph Table (26):

CCH-301 10.00% S.fwdarw.N [.degree. C.] <-40 CCH-501 11.00% Clearing point [.degree. C.] +94.5 CCH-34 4.00% .DELTA.n [589 nm, 20.degree. C.] +0.0600 CC-5-V 15.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-2F.F.F 8.00% Twist [.degree.] 90 CDU-2-F 4.00% V.sub.10 [V] 2.26 CDU-3-F 5.00% CCZU-2-F 5.00% CCZU-3-F 3.00% CCZU-5-F 5.00% CCPC-33 4.00% CCPC-34 5.00% CCPC-35 4.00% CCOC-3-3 3.00% CCOC-4-3 4.00% CCOC-4-5 2.00% CCH-5CF3 8.00%

Detailed Description Paragraph Table (28):

CCH-34 5.00% S.fwdarw.N [.degree. C.] <-40 CC-5-V 14.00% Clearing point [.degree. C.] +78.5 CCH-5CF3 8.00% .DELTA.n [589 nm, 20.degree. C.] +0.0650 CCP-2F.F.F 11.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-3F.F.F 12.00% Twist [.degree.] 90 CCP-5F.F.F 5.00% V.sub.10 [V] 1.57 CCP-20CF3.F 9.00% CCP-50CF3.F 5.00% CCP-40CF3 7.00% CDU-2-F 6.00% CDU-3-F 10.00% CCOC-3-3 3.00% CCOC-4-3 5.00%

Detailed Description Paragraph Table (29):

CCH-34 5.00% CC-5-V 12.00% CCH-5CF3 4.00% CCH-3CF3 3.00% CCP-2F.F.F 12.00% CCP-3F.F.F 11.00% CCP-5F.F.F 7.00% CCP-20CF3.F 10.00% CCP-50CF3.F 5.00% CCP-40CF3 6.00% CDU-2-F 6.00% CDU-3-F 10.00% CCOC-3-3 4.00% CCOC-4-3 5.00%

Detailed Description Paragraph Table (30):

CCH-35 5.00% CC-5-V 12.00% CCH-5CF3 4.00% CCH-3CF3 3.00% CCP-2F.F.F 12.00% CCP-3F.F.F 11.00% CCP-5F.F.F 7.00% CCP-20CF3.F 10.00% CCP-50CF3.F 5.00% CCP-40CF3 6.00% CDU-2-F 6.00% CDU-3-F 10.00% CCOC-3-3 4.00% CCOC-4-3 5.00%

Detailed Description Paragraph Table (31):

CCH-35 5.00% Clearing point [.degree. C.] +78.5 CC-5-V 14.00% .DELTA.n [589 nm, 20.degree. C.] +0.0654 CCH-5CF3 8.00% CCP-2F.F.F 11.00% CCP-3F.F.F 12.00% CCP-5F.F.F 5.00% CCP-20CF3.F 9.00% CCP-50CF3.F 5.00% CCP-40CF3 7.00% CDU-2-F 6.00% CDU-3-F 10.00% CCOC-3-3 3.00% CCOC-4-3 5.00%

Detailed Description Paragraph Table (34):

CCH-301 16.00% S.fwdarw.N [.degree. C.] <-40 CCH-501 16.00% Clearing point [.degree. C.] 95.5 CCH-35 3.00% .DELTA.n [589 nm, 20.degree. C.] +0.0608 CCH-5CF3 5.00% .DELTA..epsilon. [1 kHz, 20.degree. C.] +4.5 CCP-2F.F.F 10.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-5F.F.F 8.00% Twist [.degree.] 90 CCZU-2-F 4.00% V.sub.10 [V] 2.13 CCZU-3-F 13.00% CCZU-5-F 4.00% CCPC-33 3.00% CCPC-34 4.00% CCPC-35 4.00% CCOC-3-3 3.00% CCOC-4-3 5.00% CCOC-3-5 2.00%

Detailed Description Paragraph Table (35):

CCH-3CF3 7.00% Clearing point [.degree. C.] +80.0 CCH-301 6.00% .DELTA.n [589 nm, 20.degree. C.] +0.0689 CCH-501 5.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-2F.F.F 10.00% Twist [.degree.] 90 CCP-3F.F.F 13.00% V.sub.10 [V] 1.40 CCP-5F.F.F 5.00% CCZU-3-F 13.00% CCZU-5-F 7.00% CCP-50CF2.F.F 8.00% CDU-3-F 9.00% CCPC-30CF3.F 7.00% CCPC-50CF3.F 7.00% CCOC-3-3 3.00%

Detailed Description Paragraph Table (36):

CCH-3CF3 8.00% Clearing point [.degree. C.] +81.0 CCH-5CF3 5.00% .DELTA.n [589 nm,

20.degree. C.] +0.0655 CCH-301 9.00% .DELTA..epsilon. [1 kHz, 20.degree. C.] +8.7  
CCP-2F.F.F 8.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-3F.F.F  
13.00% Twist [.degree.] 90 CCP-5F.F.F 5.00% V.sub.10 [V] 1.47 CCZU-2-F 5.00%  
CCZU-3-F 8.00% CCZU-5-F 5.00% CCP-30CF3.F 8.00% CCP-50CF2.F.F 8.00% CDU-3-F 9.00%  
CCOC-3-3 5.00% CPCC-2-3 4.00%

Detailed Description Paragraph Table (37):

CCH-3CF3 8.00% CCH-5CF3 5.00% CCH-301 8.00% CCP-2F.F.F 8.00% CCP-3F.F.F 13.00%  
CCP-5F.F.F 5.00% CCZU-2-F 7.00% CCZU-3-F 15.00% CCZU-5-F 7.00% CCP-50CF2.F.F 4.00%  
CDU-3-F 10.00% CCOC-3-3 6.00% CPCC-2-3 4.00%

Detailed Description Paragraph Table (38):

CCH-3CF3 8.00% Clearing point [.degree. C.] +77.0 CCH-5CF3 5.00% .DELTA.n [589 nm,  
20.degree. C.] +0.0663 CCH-301 8.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m]  
0.50 CCP-2F.F.F 4.00% Twist [.degree.] 90 CCP-3F.F.F 13.00% V.sub.10 [V] 1.38  
CCP-5F.F.F 5.00% CCZU-3-F 8.00% CCZU-5-F 5.00% CCP-30CF3.F 8.00% CCP-50CF2.F.F 8.00%  
CDU-2-F 9.00% CDU-3-F 10.00% CCOC-3-3 5.00% CPCC-2-3 4.00%

Detailed Description Paragraph Table (39):

CCH-3CE3 11.00% Clearing point [.degree. C.] +79.5 CCH-5CF3 7.00% .DELTA.n [589 nm,  
20.degree. C.] +0.0656 CCP-2F.F.F 4.00% d .multidot. .DELTA.n [20.degree. C.]  
[.mu.m] 0.50 CCP-3F.F.F 10.00% Twist [.degree.] 90 CCP-5F.F.F 5.00% V.sub.10 [V]  
1.38 CCZU-3-F 9.00% CCZU-5-F 5.00% CCP-30CF3.F 8.00% CCP-50CF2.F.F 5.00% CDU-2-F  
9.00% CDU-3-F 10.00% CDU-5-F 5.00% CCOC-3-3 8.00% CPCC-2-3 4.00%

Detailed Description Paragraph Table (40):

CCH-3CF3 11.00% Clearing point [.degree. C.] +79.5 CCH-5CF3 9.00% .DELTA.n [589 nm,  
20.degree. C.] +0.0670 CCP-2F.F.F 4.00% d .multidot. .DELTA.n [20.degree. C.]  
[.mu.m] 0.50 CCP-3F.F.F 10.00% Twist [.degree.] 90 CCP-5F.F.F 5.00% V.sub.10 [V]  
1.36 CCP-30CF3.F 8.00% CCP-50CF2.F.F 5.00% CDU-2-F 9.00% CDU-3-F 10.00% CDU-5-E  
5.00% CCOC-3-3 7.00% CPCC-2-3 8.00% DCZU-3-F 9.00%

Detailed Description Paragraph Table (41):

CCH-3CF3 7.00% CCH-5CF3 7.00% CCP-2F.F.F 4.00% CCP-3F.F.F 10.00% CCP-5F.F.F 5.00%  
CCZU-3-F 9.00% CCZU-5-F 5.00% CCP-30CF3.F 8.00% CCP-50CF2.F.F 5.00% CDU-2-F 9.00%  
CDU-3-F 12.00% CDU-5-F 5.00% CCOC-3-3 8.00% CCOC-3-5 6.00%

Detailed Description Paragraph Table (42):

CCH-3CF3 6.00% CCH-34 6.00% CCP-2F.F.F 11.00% CCP-3F.F.F 11.00% CCP-5F.F.F 6.00%  
CCP-20CF3.F 12.00% CCP-50CF3.F 7.00% CDU-2-F 11.00% CDU-3-F 12.00% CDU-5-F 10.00%  
CCOC-3-3 8.00%

Detailed Description Paragraph Table (43):

CCH-3CF3 11.00% CCH-5CF3 6.00% CCP-2F.F.F 4.00% CCP-3F.F.F 10.00% CCP-5F.F.F 5.00%  
CCZU-3-F 9.00% CCZU-5-F 5.00% CCP-30CF3.F 8.00% CCP-50CF2.F.F 5.00% CDU-2-F 9.00%  
CDU-3-F 10.00% CDU-5-F 5.00% CCOC-3-3 8.00% DCC-3-5 5.00%

Detailed Description Paragraph Table (44):

CCH-5CF3 4.00% CCH-34 6.00% CCP-2F.F.F 11.00% CCP-3F.F.F 11.00% CCP-5F.F.F 6.00%  
CCP-20CF3.F 14.00% CCP-50CF3.F 9.00% CDU-2-F 11.00% CDU-3-F 12.00% CDU-5-F 8.00%  
CCOC-3-3 8.00%

Detailed Description Paragraph Table (45):

CCH-5CF3 7.00% S.fwdarw.N [.degree. C.] <-40 CCH-34 6.00% Clearing point [.degree.  
C.] +74.5 CCP-2F.F.F 11.00% .DELTA.n [589 nm, 20.degree. C.] +0.0670 CCP-3F.F.F  
11.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-5F.F.F 6.00% Twist  
[.degree.] 90 CCP-20CF3.F 12.00% V.sub.10 [V] 1.31 CCP-40CF3 8.00% CDU-2-F 11.00%  
CDU-3-F 12.00% CDU-5-F 8.00% CCOC-3-3 8.00%

Detailed Description Paragraph Table (46):

CCH-5CF3 7.00% CCH-34 6.00% CCP-2F.F.F 11.00% CCP-3F.F.F 11.00% CCP-5F.F.F 6.00%  
CCP-20CF3.F 6.00% CCP-40CF3 8.00% CDU-2-F 11.00% CDU-3-F 12.00% CDU-5-F 8.00%  
CCOC-3-3 8.00% CCOC-3-5 6.00%

Detailed Description Paragraph Table (49):

CCH-34 6.00% S.fwdarw.N [.degree. C.] <-40 CCH-501 10.00% Clearing point [.degree. C.] +80.0 CCH-5CF3 6.00% .DELTA.n [589 nm, 20.degree. C.] +0.0653 CCP-2F.F.F 11.00% .DELTA..epsilon. [1 kHz, 20.degree. C.] +9.9 CCP-3F.F.F 11.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.50 CCP-5F.F.F 6.00% Twist [.degree.] 90 CCP-20CF3.F 8.00% V.sub.10 [V] 1.33 CCZU-2-F 6.00% CCZU-3-F 14.00% CCZU-5-F 6.00% DCZG-2-OT 4.00% DCZG-3-OT 4.00% DCZG-5-OT 4.00% CCOC-3-3 4.00%

Detailed Description Paragraph Table (50):

CCH-35 3.00% Clearing point [.degree. C.] +82.0 CC-5-V 8.00% .DELTA.n [589 nm, 20.degree. C.] +0.0653 CCH-3CF3 6.00% d .multidot. .DELTA.n [20.degree. C.] [.mu.m] 0.55 CCH-5CF3 8.00% Twist [.degree.] 90 CCP-2F.F.F 10.00% V.sub.10 [V] 1.54 CCP-3F.F.F 12.00% CCP-5F.F.F 4.00% CCZU-2-F 4.00% CCZU-3-F 14.00% CCZU-5-F 4.00% CCP-20C3.F 9.00% CCP-30C3.F 5.00% CCP-20C3 3.00% CCP-40C3 3.00% CCOC-4-3 3.00% CCOC-3-3 4.00%

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 2. Document ID: US 6287648 B1

L4: Entry 2 of 6

File: USPT

Sep 11, 2001

DOCUMENT-IDENTIFIER: US 6287648 B1  
TITLE: Liquid-crystalline medium

Detailed Description Paragraph Table (3):

CCH-5CF3 10.0% Clearing point: 70.5.degree. C. CCH-34 5.0% .DELTA.n [589 nm, 20.degree. C.]: 0.059 CC-5-V 16.0% .DELTA..epsilon. [1 kHz, 20.degree. C.] +6.8 CCP-2F.F.F 12.0 .gamma..sub.1 [mPa.s, 20.degree. C.] 105 CCP-3F.F.F 10.0% CCP-5F.F.F 7.0% CCP-20CF.sub.3.F. 12.0% CCZU-2-F 5.0% CCZU-3-F 16.0% CCZU-5-F 5.0% CddCC-5-3 2.0%

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw Desc	Image
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☐ 3. Document ID: US 5868962 A

L4: Entry 3 of 6

File: USPT

Feb 9, 1999

DOCUMENT-IDENTIFIER: US 5868962 A  
TITLE: Liquid-crystalline medium

Detailed Description Paragraph Table (20):

Substance mass-%  
CCH-3CF3 6.00 T.sub.(N,I) = 74.degree. C.  
CCH-5CF3 8.00 V.sub.20 = 20 cSt CCH-501 4.00 .DELTA.n = 0.072 CCP-2F.F 6.00 V.sub.10 = 1.37 V CCP-3F.F 12.00 CCP-5F.F 9.00 CCP-2F.F.F 8.00 CCP-3F.F.F 12.00 CCP-5F.F.F 12.00 CCP-30CF2.F.F 12.00 CCP-50CF2.F.F 11.00

Detailed Description Paragraph Table (21):

Substance mass-%  
CCH-3CF3 6.00 T.sub.(N,I) = 78.degree. C.  
CCH-5CF3 8.00 V.sub.20 = 21 cSt CCH-501 4.00 .DELTA.n = 0.073 CCP-2F.F 6.00 V.sub.10 = 1.4 V CCP-3F.F 12.00 CCP-5F.F 9.00 CCP-2F.F.F 8.00 CCP-3F.F.F 12.00 CCP-5F.F.F 12.00 CCP-30CF2.F.F 12.00 CCP-50CF2.F.F 11.00

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMHC	Draw Desc	Image
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☐ 4. Document ID: US 5643495 A

L4: Entry 4 of 6

File: USPT

Jul 1, 1997

DOCUMENT-IDENTIFIER: US 5643495 A

TITLE: 1,2,2,2-tetrafluoroethyl ethers, and liquid-crystalline medium

Detailed Description Paragraph Table (3):

PCH-5F 9.0% Clearing point [.degree.C.]: 83.9  
PCH-6F 7.2% .DELTA.n [589 nm, 20.degree. C.]: 0.0906 PCH-7F 5.4% .DELTA..epsilon. [1  
kHz, 20.degree. C.]: 5.42 CCP-2OCF.sub.3 7.2% CCP-3OCF.sub.3 10.8% CCP-4OCF.sub.3  
8.1% CCP-5OCF.sub.3 8.1% BCH-3F.F 10.8% BCH-5F.F 9.0% ECCP-3OCF.sub.3 4.5%  
ECCP-5OCF.sub.3 4.5% CBC-33F 1.8% CBC-53F 1.8% CBC-55F 1.8% CC-3-OMT 10.0%

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMHC	Draw Desc	Image
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☐ 5. Document ID: US 5480581 A

L4: Entry 5 of 6

File: USPT

Jan 2, 1996

DOCUMENT-IDENTIFIER: US 5480581 A

TITLE: Liquid-crystalline medium

Detailed Description Paragraph Table (9):

example 44 45 46 47 48 49 50 Clearing point [.degree.C.] +77 +76 +81 +86 +89 +81.2  
+80 Viscosity [mm.sup.2 s.sup.-1 ] -- -- -- -- -- -20.degree. C. .DELTA.n (589  
nm, 20.degree. C.) +0.0847 0.0835 +0.0907 +0.0930 +0.0857 +0.0865 +0.0881 n.sub.e  
(589 nm, 20.degree. C.) 1.5605 1.5595 1.5672 1.5697 1.5587 1.5630 1.5635  
.DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- -- .sup..epsilon.  
.parallel. (1 kHa, 20.degree. C.) -- -- -- -- -- d.multidot. .DELTA.n [.mu.m]  
= 0.4 -- -- -- -- -- V.sub.(10,0,20) [V] 1.59 1.49 1.46 1.45 1.74 1.47 1.42  
V.sub.(60,0,20) [V] -- 1.93 -- 1.89 2.23 1.90 1.84 V.sub.(90,0,20) [V] -- 2.52 --  
2.46 2.90 2.48 PCH-5F 8.0 Composition [%] PCH-5F 12.0 PCH-5F 12.0 PCH-5F 8.0 PCH-5F  
8.0 PCH-5F 9.0 PCH-5F 8.0 PCH-7F 5.0 PCH-7F 7.0 PCH-7F 5.0 CCP-2OCF3 11.0 PCH-7F 8.0  
CCP-2OCF3 10.0 PCH-7F 4.0 CCP-2OCF3 10.0 PCH-7F 6.0 CCP-2OCF3 10.0 CCP-3OCF3 12.0  
CCP-2OCF3 10.0 CCP-3OCF3 12.0 CCP-2OCF3 10.0 CCP-3OCF3 12.0 CCP-2OCF3 12.0 CCP-3OCF3  
12.0 CCP-4OCF3 9.0 CCP-3OCF3 12.0 CCP-4OCF3 8.0 CCP-3OCF3 12.0 CCP-4OCF3 8.0  
CCP-3OCF3 12.0 CCP-4OCF3 8.0 CCP-5OCF3 11.0 CCP-4OCF3 8.0 CCF-5OCF3 12.0 CCP-4OCF3  
8.0 CCP-5OCF3 12.0 CCP-4OCF3 10.0 CCP-5OCF3 10.0 BCH-3F.F.F 10.0 CCP-5OCF3 12.0  
BCH-3F.F.F 8.0 CCP-5OCF3 12.0 BCH-3F.F.F 14.0 CCP-5OCF3 12.0 BCH-3F.F.F 10.0  
BCH-5F.F.F 11.0 BCH-3F.F.F 14.0 BCH-5F.F.F 6.0 BCH-3F.F.F 14.0 BCH-5F.F.F 11.0  
BCH-5F.F.F 10.0 CCP-3F.F.F 12.0 BCCP-3F.F.F 12.0 CCP-3F.F.F 13.0 BCH-5F.F.F 10.0  
CCP-3F.F.F 12.0 BCH-5F.F.F 10.0 CCP-3F.F.F 12.0 CCP-5F.F.F 11.0 CCP-5F.F.F 12.0  
CCP-5F.F.F 12.0 CCP-3F.F.F 10.0 CCP-5F.F.F 7.0 ECCP-3F.F.F 10.0 CCP-5F.F.F 9.0  
CCP-5F.F.F 8.0 ECCP-3F.F.F 6.0 ECCP-5F.F.F 7.0 ECCP-3F.F.F 6.0 ECCP-3F.F.F 4.0 CCP-3CF3.F.F  
12.0 example 51 52 53 54 55 56 Clearing point [.degree.C.] +87.5 84.3 +86 +87 +87  
+82 Viscosity [mm.sup.2 s.sup.-1 ] -20.degree. C. +0.0930 -- 200 188 188 -- .DELTA.n  
(589 nm, 20.degree. C.) -- +0.0928 +0.0920 +0.0919 +0.0919 +0.0942 n.sub.e (589 nm,  
20.degree. C.) 1.5695 1.5693 1.5683 1.5679 1.5679 1.5679 .DELTA..epsilon. (1 kHz,

20.degree. C.) -- -- -- 7.9 7.9 -- .sup..epsilon. .parallel.(1 kHz, 20.degree. C.)  
-- -- -- 11.1 11.1 -- d .multidot. .DELTA.n [.mu.m] = 0.4 -- -- -- --  
V.sub.(10,0,20) [V] 1.48 1.43 1.46 1.56 1.56 1.46 V.sub.(60,0,20) [V] 1.92 1.84  
1.89 1.93 1.93 1.88 V.sub.(90,0,20) [V] 2.50 2.38 2.47 2.41 2.41 2.45 Composition  
[%] PCH-5F 7.0 PCH-5F 10.0 PCH-5F 7.0 PCH-5F 5.0 PCH-5F 5.0 PCH-5F 8.0 PCH-7F 4.0  
CCP-20CF3 10.0 PCH-7F 4.0 PCH-7F 6.0 PCH-7F 6.0 CCP-20CF3 11.0 CCP-30CF3 14.0  
CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-20CF3 11.0 PCH-7F 4.0 CCP-40CF3 9.0 CCP-40CF3 10.0  
CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-20CF3 10.0 CCP-50CF3 11.0 CCP-50CF3  
10.0 CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-30CF3 12.0 BCH-3F.F.F 11.0  
BCH-3F.F.F 14.0 CCP-50CF3 11.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-40CF3 8.0  
BCH-5F.F.F 11.0 BCH-5F.F.F 10.0 BCH-3F.F.F 11.0 BCH-3F.F.F 12.0 BCH-3F.F.F 12.0  
CCP-50CF3 12.0 CCP-3F.F.F 12.0 CCP-3F.F.F 14.0 BCH-5F.F.F 11.0 BCH-5F.F.F 11.0  
BCH-5F.F.F 11.0 BCH-3F.F.F 14.0 CCP-5F.F.F 10.0 CCP-5F.F.F 8.0 CCP-3F.F.F 12.0  
CCP-3F.F.F 12.0 CCP-3F.F.F 12.0 BCH-5F.F.F 10.0 CBC-33F 2.0 CCP-5F.F.F 10.0  
CCP-5F.F.F 9.0 CCP-5F.F.F 9.0 CCP-3CF3.F.F 10.0 CBC-33F 1.0 CCP-5CF3.F.F 8.0  
ECCP-3F.F.F 4.0 example 57 58 59 60 61 62 Clearing Point [.degree.C.] +88 +85 59.7 +85  
+90 +96.5 Viscosity [mm.sup.2 s.sup.-1] -20.degree. C. -- smect. -- -- --  
.DELTA.n (589 nm, 20.degree. C.) +0.0978 +0.1348 0.1006 +0.1363 +0.0990 +0.1020  
n.sub.e (589 nm, 20.degree. C.) 1.5714 1.6176 1.5905 1.6173 1.5775 1.5804  
.DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- +9.36 -- -- -- .sup..epsilon.  
.parallel. (1 kHz, 20.degree. C.) -- -- 13.07 -- -- -- d .multidot. .DELTA.n [.mu.m]  
= 0.4 -- -- -- -- V.sub.(10,0,20) [V] 1.46 -- -- -- 1.51 1.55 V.sub.(60,0,20)  
[V] 1.89 -- -- -- 1.96 2.01 V.sub.(90,0,20) [V] 2.46 -- -- -- 2.56 2.60 Composition  
[%] PCH-5F 8.0 PCH-5F 10.0 CCP-3F.F.F 25.0 PCH-5F 10.0 PCH-5F 8.0 PCH-5F 8.0  
PTP-40F 10.0 CCP-5F.F.F 15.0 PTP-40F 10.0 PCH-7F 4.0 CCP-20CF3 10.0 CCP-20CF3 10.0  
PTP-50F 10.0 BCH-3F.F.F 20.0 PTP-50F 10.0 CCP-20CF3 10.0 CCP-30CF3 12.0 CCP-30CF3  
12.0 CCP-20CF3 7.0 BCH-5F.F.F 40.0 CCP-20CF3 7.0 CCP-30CF3 12.0 CCP-40CF3 8.0  
CCP-40CF3 8.0 CCP-30CF3 7.0 CCP-30CF3 7.0 CCP-40CF3 8.0 CCP-50CF3 12.0 CCP-50CF3  
12.0 CCP-40CF3 7.0 CCP-40CF3 7.0 CCP-50CF3 12.0 BCH-3F.F.F 14.0 BCH-3F.F.F 14.0  
CCP-50CF3 7.0 CCP-50CF3 7.0 BCH-3F.F.F 14.0 BCH-5F.F.F 1.0 BCH-5F.F.F 11.0  
ECCP-30CF3 5.0 BCCP-30CF3 5.0 BCH-5F.F.F 10.0 CCP-3CL.F.F 12.0 CCP-3CF3.F.F 12.0  
ECCP-3F.F.F 7.0 BCCP-3F.F.F 7.0 CCP-3CL.F.F 10.0 CCP-5CL.F.F 7.0 CCP-5CF3.F.F 7.0  
BCH-3F.F.F 5.0 BCH-3F.F.F 5.0 CCP-5CL.F.F 8.0 ECCP-3F.F.F 6.0 ECCP-3F.F.F 6.0 BCH-5F.F.F  
5.0 BCH-5F.F.F 5.0 ECCP-3F.F.F 4.0 CCP-3F.F.F 5.0 CCP-5CF3.F.F 10.0 CCP-5F.F.F 5.0  
CPTP-30CF3 5.0 CPTP-30CF3 5.0 CPTP-50CF3 5.0 CPTP-50CF3 5.0 example 63 64 65 66 67  
68 Clearing Point [.degree.C.] +94 +100 +83 -- +85 +64 Viscosity [mm.sup.2 s.sup.-1]  
] -20.degree. C. -- -- -- -- -- .DELTA.n (589 nm, 20.degree. C.) +0.1010 +0.1045  
+0.0903 +0.0934 +0.0864 +0.0897 n.sub.e (589 nm, 20.degree. C.) 1.5795 1.5832 1.5650  
1.5667 1.5594 1.5716 .DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- --  
p.sup..epsilon. .parallel. (1 kHz, 20.degree. C.) -- -- -- -- -- d .multidot.  
.DELTA.n [.mu.m] = 0.4 -- -- -- -- -- V.sub.(10,0,20) [V] 1.57 1.54 1.37 1.51  
1.50 1.22 V.sub.(60,0,20) [V] 2.02 1.98 1.78 1.96 1.96 1.60 V.sub.(90,0,20) [V] 2.60  
2.58 2.32 2.55 2.58 2.08 Composition [%] PCH-5F 8.0 PCH-5F 8.0 PCH-5F 5.0 PCH-5F 5.0  
PCH-5F 6.0 PCH-5F 12.0 PCH-7F 4.0 CCP-20CF3 10.0 PCH-7F 6.0 PCH-7F 6.0 PCH-7F 7.0  
PCH-7F 6.0 CCP-20CF3 10.0 CCP-30CF3 12.0 CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-20CF3  
12.0 CCP-3F.F.F 10.0 CCP-30CF3 12.0 CCP-40CF3 8.0 CCP-30CF3 12.0 CCP-30CF3 12.0  
CCP-30CF3 13.0 CCP-5F.F.F 9.0 CCP-40CF3 8.0 CCP-50CF3 12.0 CCP-40CF3 10.0 CCP-40CF3  
10.0 CCP-40CF3 12.0 BCH-3F.F.F 10.0 CCP-50CF3 12.0 BCH-5CL.F.F 25.0 CCP-50CF3 12.0  
CCP-50CF3 12.0 CCP-50CF3 13.0 BCH-5F.F.F 9.0 BCH-5CL.F.F 24.0 CCP-3F.F.F 12.0  
CUP-3F.F.F 12.0 BCH-3F.F.F 12.0 CUP-3F.F.F 12.0 CCP-5CF3.F.F 15.0 CCP-3F.F.F 10.0  
CCP-5F.F.F 7.0 BCH-5F.F.F 11.0 BCH-5F0CF3 11.0 BCH-5F.F.F 4.0 CCP-3CL.F.F 15.0  
CCP-5F.F.F 8.0 ECCP-3F.F.F 6.0 CCP-3F.F.F 12.0 CCP-3F.F.F 12.0 CCP-3F.F.F 12.0  
CCP-5CL.F.F 14.0 ECCP-3F.F.F 4.0 CCP-5F.F.F 9.0 CCP-5F.F.F 9.0 CCP-5F.F.F 9.0 example  
69 70 71 72 73 74 Clearing Point [.degree.C.] +88 +88 >-30 +90 +68 +94 +87 Viscosity  
[mm.sup.2 s.sup.-1] -20.degree. C. -- -- -- -- -- .DELTA.n (589 nm, 20.degree.  
C.) +0.0963 +0.0958 +0.0945 +0.0993 +0.0818 +0.0885 n.sub.e (589 nm, 20.degree. C.)  
1.5776 1.5727 1.5710 1.5767 1.5573 1.5635 .DELTA..epsilon. (1 kHz, 20.degree. C.) --  
-- -- -- +7.2 .sup..epsilon. .parallel. (1 kHz, 20.degree. C.) -- -- -- -- --  
10.4 d .multidot. .DELTA.n [.mu.m] = 0.4 -- -- -- -- -- V.sub.(10,0,20) [V] 1.31  
1.49 1.48 1.51 1.42 1.62 V.sub.(60,0,20) [V] 1.73 1.95 1.93 1.96 1.80 2.11  
V.sub.(90,0,20) [V] 2.28 2.54 2.51 2.55 2.27 2.74 Composition [%] PCH-5F 5.0 PCH-5F  
5.0 PCH-5F 5.0 PCH-5F 5.0 PCH-5F 10.0 PCH-5F 5.0 PCH-7F 4.0 PCH-7F 6.0 PCH-7F 6.0  
PCH-7F 6.0 PCH-6F 8.0 PCH-6F 8.0 CCP-3F.F.F 10.0 CCP-20CF3 11.0 CCP-20CF3 11.0  
CCP-20CF3 11.0 PCH-7F 7.0 CCP-20CF3 11.0 CCP-5F.F.F 10.0 CCP-30CF3 12.0 CP-30CF3  
12.0 CCP-30CF3 12.0 CCP-20CF3 11.0 CP-30CF3 12.0 BCH-3F.F.F 10.0 CCP-40CF3 10.0



CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-30CF3 12.0 CCP-40CF3 10.0 BCH-5F.F.F 8.0 CCP-50CF3  
12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-40CF3 10.0 CCP-50CF3 12.0 CCP-5CF3.F.F 15.0  
BCH-3F.F.F 12.0 BCH-3F.F.F 12.0 BCH-3F.F 7.0 CCP-50CF3 12.0 ECCP-3F.F 7.0  
CCP-3CL.F.F 14.0 BCH-5F.F.F 11.0 BCH-5F.F.F 11.0 BCH-5F.F 7.0 BCH-3F.F.F 8.0  
ECCP-5F.F 7.0 CCP-5CL.F.F 14.0 CCP-3CL.F.F 12.0 CCP-3F.F.F 12.0 BCH-3F.F.F 8.0  
BCH-5F.F.F 8.0 BCH-3F.F.F 8.0 CP-3F 5.0 CCP-5F.F.F 9.0 CCP-5CL.F.F 9.0 BCH-5F.F.F  
8.0 CCP-3F.F.F 8.0 BCH-5F.F.F 8.0 CP-5F 5.0 CCP-3F.F.F 8.0 CCP-5F.F.F 6.0 CCP-3F.F.F  
8.0 CCP-5F.F.F 6.0 CCP-5F.F.F 6.0 example 75 76 77 78 79 80 Clearing Point  
[.degree.C.] +92 +96 +78 +84 +78 +86 Viscosity [mm.sup.2 s.sup.-1] -20.degree. C.  
-- -- -- -- -- .DELTA.n (589 nm, 20.degree. C.) +0.0915 +0.0909 +0.0861 +0.0896  
+0.0886 +0.0920 n.sub.e (589 nm, 20.degree. C.) 1.5680 1.5670 1.5612 1.5658 1.5645  
1.5695 .DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- -- .sup..epsilon.  
.parallel. (1 kHz, 20.degree. C.) -- -- -- -- -- d .multidot. .DELTA.n [.mu.m] =  
0.4 -- -- -- -- -- V.sub.(10,0,20) [V] 1.59 1.61 1.55 1.39 1.33 1.36 V.sub.(60,0,20)  
[V] 2.05 2.07 1.99 1.81 1.72 1.79 V.sub.(90,0,20) [V] 2.66 2.67 2.58 2.35 2.25 2.36  
Composition [%] PCH-5F 5.0 CH-5F 6.0 PCH-5F 5.0 PCH-5F 5.0 PCH-5F 5.0 PCH-5F 4.0  
PCH-7F 6.0 PCH-7F 6.0 PCH-7F 6.0 PCH-7F 6.0 PCH-7F 6.0 PCH-7F 5.0 CCP-20CF3 1.0  
CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-20CF3 8.0 CCP-20CF3 8.0 CCP-30CF3  
12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 10.0 CCP-30CF3 10.0  
CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 8.0 CCP-40CF3  
8.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3 10.0  
CCP-50CF3 10.0 ECCP-3F.F 7.0 ECCP-33 8.0 PCH-53 8.0 BCH-3F.F.F 12.0 BCH-3F.F.F 12.0  
BCH-3F.F.F 12.0 BCH-3F.F.F 7.0 BCH-3F.F.F 9.0 BCH-3F.F.F 9.0 BCH-5F.F.F 11.0  
BCH-6F.F.F 11.0 BCH-5F.F.F 11.0 BCH-3F.F.F 8.0 BCH-5F.F.F 9.0 BCH-5F.F.F 9.0  
CCP-2F.F.F 6.0 CCP-2F.F.F 7.0 CCP-2F.F.F 7.0 BCH-5F.F.F 8.0 CCP-3F.F.F 9.0  
CCP-3F.F.F 9.0 CCP-3F.F.F 6.0 CCP-3F.F.F 8.0 CCP-3F.F.F 8.0 CCP-3F.F.F 8.0  
CCP-5F.F.F 9.0 CCP-5F.F.F 9.0 CCP-4F.F.F 5.0 CCP-4F.F.F 7.0 CCP-4F.F.F 7.0  
CCP-5F.F.F 6.0 CCP-5F.F.F 4.0 CCP-5F.F.F 8.0 CCP-5F.F.F 8.0 CBC-53F 2.0 CBC-53F 2.0  
example 81 82 83 84 85 86 Clearing Point [.degree.C.] +86 +112 +72 +79 +84 +76  
Viscosity [mm.sup.2 s.sup.-1] -20.degree. C. -- 540 -- -- -- .DELTA.n (589 nm,  
20.degree. C.) +0.0919 +0.1589 +0.1271 0.0970 +0.0979 +0.0954 n.sub.e (589 nm,  
20.degree. C.) 1.5696 1.6584 1.6229 1.5750 1.5737 1.5718 .DELTA..epsilon. (1 kHz,  
20.degree. C.) -- -- -- -- -- .sup..epsilon. .parallel. (1 kHz, 20.degree. C.) --  
-- -- -- -- -- d .multidot. .DELTA.n [.mu.m] = 0.5 -- -- -- -- -- V.sub.(10,0,20)  
[V] 1.35 2.00 1.41 1.33 1.40 1.29 V.sub.(60,0,20) [V] 1.78 2.27 1.79 1.75 1.83 1.69  
V.sub.(90,0,20) [V] 2.33 2.78 2.35 2.33 2.41 2.25 Composition [%] PCH-5F 4.0  
CCP-3CL.F.F. 11.2 PCH-5F 10.0 PCH-5F 5.0 PCH-5F 5.0 PCH-5F 5.0 PCH-7F 5.0  
CCP-5CL.F.F 21.4 PCH-7F 10.0 PCH-7F 6.0 PCH-7F 6.0 PCH-7F 6.0 CCP-20CF3 8.0  
BCH-3CL.F.F 25.9 CCP-3CL.F.F 10.0 CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-20CF3 11.0  
CCP-30CF3 10.0 BCH-5CL.F.F 41.5 CCP-5CL.F.F 20.0 CCP-30CF3 12.0 CCP-30CF3 12.0  
CCP-30CF3 12.0 CCP-40CF3 8.0 CCP-3CL.F.F 20.0 CCP-40CF3 10.0 CCP-40CF3 10.0  
CCP-40CF3 10.0 CCP-50CF3 10.0 BCH-5CL.F.F 30.0 CCP-50CF3 12.0 BCH-3F.F.F 12.0  
CCP-50CF3 12.0 CCP-2F.F.F 7.0 BCH-3F.F.F 12.0 BCH-5F.F.F 11.0 BCH-3F.F.F 12.0  
CCP-3F.F.F 8.0 BCH-5F.F.F 11.0 CUP-30CF3 12.0 BCH-5F.F.F 11.0 CCP-4F.F.F 7.0  
CUP-3F.F. 12.0 CCP-5F.F.F 9.0 CUP-3F.F.F 6.0 CCP-5F.F.F 8.0 CCP-5F.F.F 9.0  
CUP-5F.F.F 6.0 BCH-3F.F.F 6.0 CCP-5F.F.F 9.0 BCH-4F.F.F 10.0 BCH-5F.F.F 7.0 CBC-53F  
2.0 example 87 88 89 90 91 92 Clearing Point [.degree.C.] +92 +85 +95 +88 +88 +83  
Viscosity [mm.sup.2 s.sup.-1] -20.degree. C. -- -- -- -- -- .DELTA.n (589 nm,  
20.degree. C.) 0.096 0.096 0.100 0.097 0.096 0.0905 n.sub.e (589 nm, 20.degree. C.)  
1.569 1.568 1.577 1.572 1.570 1.5654 .DELTA..epsilon. (1 kHz, 20.degree. C.) -- --  
-- -- -- -- -- .sup..epsilon. .parallel. (1 kHz, 20.degree. C.) -- -- -- -- -- d  
.multidot. .DELTA.n [.mu.m] = 0.5 -- -- -- -- -- V.sub.(10,0,20) [V] 1.61 1.54  
1.63 1.67 1.60 1.40 V.sub.(60,0,20) [V] 2.05 1.95 2.09 2.14 2.03 1.84  
V.sub.(90,0,20) [V] 2.67 2.52 2.72 2.79 2.63 2.43 Composition [%] PCH-5F 5.0 PCH-5F  
5.0 PCH-5F 5.0 PCH-5F 5.0 PCH-5F 5.0 PCH-7F 6.0 PCH-7F 6.0 PCH-7F 6.0  
PCH-7F 6.0 PCH-7F 6.0 PCH-7F 6.0 CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-20CF3 11.0  
CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3  
12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-40CF3 10.0 CCP-40CF3 10.0  
CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-50CF3 12.0 CCP-50CF3  
12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 BCH-3F.F.F 12.0  
BCH-3F.F.F 12.0 BCH-3F.F.F 12.0 BCH-3F.F.F 12.0 BCH-3F.F.F 12.0 CUP-30CF3 12.0  
BCH-5F.F.F 11.0 BCH-5F.F.F 11.0 BCH-5F.F.F 11.0 BCH-5F.F.F 11.0 BCH-5F.F.F 11.0  
BCH-5F.F.F 11.0 CCP-3F.F.F 12.0 CCP-5F.F.F 9.0 CCP-5F.F.F 9.0 CCP-3CF3.F.F 12.0  
CCP-3CF3.F.F 12.0 CCP-3CI.F.F 12.0 CCP-30CF2.F 12.0 CCP-3CF3.F 12.0 CCP-5CF3.F.F 9.0  
CCP-5CF3.F.F 9.0 CCP-5CI.F.F 9.0 CCP-40CF2.F 9.0 example 93 94 95 96 97 Clearing

Point [.degree.C.] +88 +86 +92 +92 +88 Viscosity [mm.sup.2 s.sup.-1 ] -20.degree. C.  
-- -- -- -- -- .DELTA.n (589 nm, 20.degree. C.) +0.0913 +0.0946 +0.0941 +0.0984  
0.093 n.sub.e (589 nm, 20.degree. C.) 1.5633 1.5681 1.5674 1.5748 1.569  
.DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- -- .sup..epsilon. .parallel. (1  
kHz, 20.degree. C.) -- -- -- -- -- d .multidot. .DELTA.n [.mu.m] = 0.5 -- -- -- --  
-- V.sub.(10,0,20) [V] 1.49 1.41 1.50 1.46 1.53 V.sub.(60,0,20) [V] 1.93 1.85 1.96  
1.92 1.96 V.sub.(90,0,20) [V] 2.54 2.44 2.57 2.55 2.56 Composition [%] PCH-5F 5.0  
PCH-5F 5.0 PCH-5F 5.0 PCH-5F 5.0 PCH-5F 5.0 PCH-7F 6.0 PCH-7F 6.0 PCH-7F 6.0 PCH-7F  
6.0 PCH-7F 6.0 CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-20CF3  
11.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0  
CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-50CF3  
12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 BCH-3CF3.F.F 12.0  
BCH-3CF3.F.F 12.0 BCH-3CF3.F.F 12.0 BCH-3F.F.F 12.0 BCH-3F.F.F 12.0 BCH-5F.F.F 11.0  
BCH-5F.F.F 11.0 BCH-5F.F.F 11.0 BCH-5CL.F.F 11.0 BCH-5F.F.F 11.0 CCP-3F.F.F 12.0  
CCP-3F.F.F 12.0 CCP-3F.F.F 12.0 CCP-3F.F.F 12.0 CCP-3F.F.F 12.0 CCP-5F.F.F 9.0  
CCP-5F.F.F 9.0 CCP-5F.F.F 9.0 CCP-5F.F.F 9.0 CCP-5F.F.F 9.0 example 98 99 100 101  
102 Clearing Point [.degree.C.] +84 +86 +94 +98 +82 Viscosity [mm.sup.2 s.sup.-1 ]  
-20.degree. C. -- -- -- -- -- .DELTA.n (589 nm, 20.degree. C.) 0.090 0.096 0.089  
+0.087 +0.0936 n.sub.e (589 nm, 20.degree. C.) 1.560 1.568 1.558 1.552 1.5707  
.DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- -- +4.8 -- .sup..epsilon. .parallel.  
(1 kHz, 20.degree. C.) -- -- -- -- -- 8.1 -- d .multidot. .DELTA.n [.mu.m] = 0.5 -- -- -- --  
1.86 -- V.sub.(10,0,20) [V] 1.55 1.56 1.69 2.37 1.75 V.sub.(60,0,20) [V] 1.99 1.98  
2.15 3.12 2.71 V.sub.(90,0,20) [V] 2.55 2.55 2.78 PCH-5F 5.0 Composition [%] PCH-5F  
5.0 PCH-5F 5.0 PCH-7F 6.0 PCH-7F 6.0 PCH-7F 6.0 CCH-3CF3 6.0 CCP-20CF3 11.0  
CCP-20CF3 10.0 CCP-20CF3 11.0 CCP-20CF3 8.0 CCH-5CF3 6.0 CCP-30CF3 12.0 CCP-30CF3  
11.0 CCP-30CF3 12.0 CCP-30CF3 9.0 CCP-20CF3 8.0 CCP-40CF3 10.0 CCP-40CF3 9.0  
CCP-40CF3 10.0 CCP-40CF3 8.0 CCP-30CF3 8.0 CCP-50CF3 12.0 CCP-50CF3 11.0 CCP-50CF3  
12.0 CCP-50CF3 9.0 CCP-40CF3 8.0 BCH-3F.F.F 12.0 BCH-3F.F.F 12.0 BCH-3F.F.F 12.0  
CCP-50CF3 9.0 BCH-5F.F.F 11.0 BCH-5F.F.F 11.0 BCH-5F.F.F 11.0 CCP-3F.F.F 21.0  
CCP-3F.F.F 12.0 CCP-3F.F.F 0.0 CCP-5F.F.F 9.0 CCP-5F.F.F 0.0 CCP-3CL.F.F 12.0  
CCH-3CF3 8.0 CCP-5CF3.F.F 21.0 CCP-5CL.F.F 11.0 CCP-3CL.F.F 12.0 CCH-5CF3 7.0  
CCP-3CF3.F.F 16.0 CCP-5CL.F.F 11.0 CCP-5CF3.F.F 16.0 CCP-3CF3.F.F 16.0 CCP-5CF3.F.F  
16.0 example 103 104 105 106 107 108 -- -- -- -- -- 07.90 07.90 -- -- -- -- -- <-40 <-40 --  
Clearing Point [.degree.C.] 74.3 72.8 69.8 +63 +64 +89 Viscosity [mm.sup.2 s.sup.-1 ]  
-20.degree. C. -- -- -- -- -- 122 124 -- d .multidot. .DELTA.n (.mu.m) = 0.4 -- -- -- --  
cr. > 3 h cr. < 3 h .DELTA.n (589 nm, 20.degree. C.) 0.1064 0.1076 0/1098 0.0873  
0.800 +0.1019 n.sub.e (589 nm, 20.degree. C.) -- -- -- -- -- 1.5669 1.5576 1.5801  
.DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- -- -- -- .sup..epsilon. .parallel.  
(1 kHz, 20.degree. C.) -- -- -- -- -- -- -- V.sub.(10,0,20) [V] -- -- -- -- -- 1.51 1.61 1.66  
V.sub.(60,0,20) [V] -- -- -- -- -- 1.93 2.04 2.11 V.sub.(90,0,20) [V] -- -- -- -- -- 2.52 2.66  
2.74 Composition [%]:

Detailed Description Paragraph Table (10):

PCH-5F 15.0 PCH-5F 14.2 PCH-5F 12.6 PCH-5F 10.0 PCH-5F 10.0 PCH-5F 10.0 PCH-7F 7.5  
PCH-7F 7.1 PCH-7F 6.3 PCH-6F 7.0 PCH-6F 7.0 CCP-20CF3 5.6 CCP-20CF3 5.3 CCP-20CF3  
4.7 PCH-7F 15.0 PCH-7F 10.0 PCH-7F 10.0 CCP-30CF3 11.2 CCP-30CF3 10.6 CCP-30CF3 9.4  
CCP-20CF3 10.0 CCP-20CF3 10.0 CCP-20CF3 10.0 CCP-40CF3 3.7 CCP-40CF3 3.5 CCP-40CF3  
3.1 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-50CF3 9.2 CCP-50CF3 8.7  
CCP-50CF3 7.8 CCP-40CF3 8.0 CCP-40CF3 8.0 CCP-40CF3 8.0 BCH-3F.F 21.4 BCH-3F.F 20.2  
BCH-3F.F 18.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 BCH-5F.F 21.4 BCH-5F.F  
20.2 BCH-5F.F 18.0 BCH-3F.F.F 10.0 CCP-3F.F.F 10.0 BCH-3F.F.F 5.0 BCH-3F.F.F 10.0  
BCH-3F.F.F 20.0 BCH-5F.F 16.0 BCH-3F.F.F 15.0 BCH-5.FCF3 15.0 BCH-5.FCF3 15.0  
CBC-33F 4.0 CBC-53F 4.0 example 109 110 111 112 113 114 -- -- -- -- -- Clearing Point  
[.degree.C.] +84 +86 +91 +101 +80 +78 Viscosity [mm.sup.2 s.sup.-1 ] -20.degree. C.  
-- -- -- -- -- Sm d .multidot. .DELTA.n (.mu.m) = 0.4 .DELTA.n (589 nm, 20.degree.  
C.) +0.0880 +0.0976 +0.0916 +0.0934 +0.0756 0.0844 n.sub.e (589 nm, 20.degree. C.)  
1.5606 1.5695 1.5664 1.5608 1.5489 1.5610 .DELTA..epsilon. (1 kHz, 20.degree. C.) --  
-- -- -- -- -- .sup..epsilon. .parallel. (1 kHz, 20.degree. C.) -- -- -- -- -- --  
V.sub.(10,0,20) [V] 1.76 1.70 1.72 1.90 1.66 1.61 V.sub.(60,0,20) [V] 2.24 2.17 2.21  
2.42 2.12 2.06 V.sub.(90,0,20) [V] 2.89 2.76 2.87 3.07 2.73 2.72 Composition [%]:  
PCH-5F 10.0 PCH-5F 10.0 PCH-5F 7.0 PCH-5F 12.0 PCH-5F 12.0 PCH-7F 10.0 PCH-7F 7.0  
PCH-7F 4.0 PCH-7F 8.0 CCP-20CF3 10.0 CCP-20CF3 10.0 CCP-20CF3 10.0 CCP-20CF3 10.0  
CCP-20CF3 10.0 CCP-20CF3 10.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3  
12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-40CF3 8.0 CCP-40CF3 8.0 CCP-40CF3 10.0  
CCP-40CF3 8.0 CCP-40CF3 8.0 CCP-40CF3 8.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3

12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 BCH-3F.F.F 10.0 ECCP-3F.F 12.0  
BCH-3F.F 8.0 BCH-5.FCF3 10.0 CCP-3F.F.F 14.0 BCH-5F.F 6.0 CCH-52CF3 15.0 CCH-32CF3  
7.0 CCH-32CF3 10.0 CCP-5F.F.F 12.0 CCP-3F.F.F 13.0 BCH-3F.F.F 15.0 CCH-52CF3 7.0  
CCH-52CF3 10.0 CCP-5F.F.F 12.0 BCH-5.FCF3 .0 BCH-3F.F.F 15.0 ECCP-3F.F 12.0  
ECCP-3F.F 10.0 CBC-33F 4.0 BCH-5.FCF3 15.0 ECCP-5F.F 10.0 BCH-3F.F.F 12.0 CBC-53F  
4.0 CBC-33F 4.0 BCH-5.FCF3 12.0 example 115 116 17 118 119 120 121 -- -- Clearing  
Point [.degree.C.] +82 +75 +84 +88 +77 +83 +77 Viscosity [mm.sup.2 s.sup.-1 ]  
-20.degree. C. -- -- -- -- -- d .multidot. .DELTA.n (.mu.m) = 0.4 .DELTA.n  
(589 nm, 20.degree. C.) +0.0883 0.0876 +0.0908 +0.0925 0.0853 +0.0905 0.0837 n.sub.e  
(589 nm, 20.degree. C.) 1.5519 1.5666 1.5655 1.5641 .5613 1.5575 1.5601  
.DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- -- .sup..epsilon.  
.parallel. (1 kHz, 20.degree. C.) -- -- -- -- -- V.sub.(10,0,20) [V] 1.82 1.51  
1.65 1.74 1.64 1.68 1.71 V.sub.(60,0,20) [V] 2.29 1.95 2.13 2.21 2.12 2.14 2.17  
V.sub.(90,0,20) [V] 2.89 2.54 2.76 2.84 2.75 2.75 2.76 Composition [%]: PCH-5F 11.0  
PCH-5F 11.0 PCH-5F 11.0 PCH-5F 12.0 PCH-5F 12.0 PCH-7F 9.0 CCH-32CF3 14.0 PCH-7F 4.0  
CCP-20CF3 8.0 PCH-7F 7.0 PCH-7F 7.0 PCH-7F 10.0 CCH-52CF3 14.0 PCH-7F 10.0 CCP-20CF3  
10.0 CCP-30CF3 10.0 CCP-20CF3 10.0 CCP-20CF3 10.0 CCP-20CF3 10.0 CCP-2CF3 10.0  
CCP-30CF3 12.0 CCP-40CF3 7.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3  
12.0 CCP-40CF3 8.0 CCP-50CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 8.0  
CCP-20CF3 10.0 CCP-40CF3 8.0 CCP-50CF3 12.0 BCH-3F.F 10.0 CCP-50CF3 12.0 CCP-50CF3  
12.0 CCP-50CF3 12.0 CCP-30CF3 12.0 CCP-40CF3 8.0 BCH-5F.F 10.0 BCH-3F.F.F 10.0  
BCH-3F.F.F 10.0 ECCP-3F.F 10.0 CCP-40CF3 8.0 CCP-50CF3 12.0 CCH-32CF3 15.0  
CCP-3F.F.F 13.0 BCH-5.FCF3 10.0 BCH-5.FCF3 10.0 ECCP-5F.F 10.0 CCP-50CF3 12.0  
ECCP-3F.F 10.0 CCH-52CF3 15.0 CCP-5F.F.F 12.0 ECCP-30CF 3 10.0 BCH-3F.F.F 8.0  
BCH-3F.F.F 15.0 ECCP-5F.F 10.0 ECCP-50CF3 8.0 BCH-5F.F.F 8.0 BCH-5F.F.F 15.0  
BCH-3F.F.F 12.0 ECCP-3F.F 10.0 BCH-5F.F.F 15.0 BCH-5.FCF3 12.0 ECCP-5F.F 8.0 example  
122 123 124 125 126 127 128 -- -- Clearing Point [.degree.C.] +78 +86 +99 +74 +82  
+83 +74.5 Viscosity [mm.sup.2 s.sup.-1 ] -20.degree. C. -- -- -- -- -- d  
.multidot. .DELTA.n (.mu.m) = 0.4 .DELTA.n (589 nm, 20.degree. C.) 0.0871 +0.0942  
0.0840 +0.0867 0.0887 +0.0918 0.0893 n.sub.e (589 nm, 20.degree. C.) 1.5644 .5675  
1.5520 1.5643 1.5657 1.5697 1.5598 .DELTA..epsilon. (1 kHz, 20.degree. C.) -- +6.7  
-- -- -- -- -- .sup..epsilon. .parallel. (1 kHz, 20.degree. C.) -- 9.7 -- -- --  
-- V.sub.(10,0,20) [V] 1.64 1.70 1.99 1.61 1.62 1.58 1.55 V.sub.(60,0,20) [V] 2.0  
2.18 2.51 2.04 2.10 2.02 1.99 V.sub.(90,0,20) [V] 2.68 2.82 3.22 2.62 2.73 2.61 2.57  
Composition [%]: PCH-5F 14.0 PCH-5F 11.0 CCH-32CF3 2.0 PCH-5F 14.0 PCH-5F 11.0  
PCH-5F 10.0 PCH-5F 8.0 PCH-7F 7.0 CCH-52CF3 12.0 PCH-7F 6.0 CCP-20CF3 10.0 PCH-7F  
8.0 PCH-7F 7.0 PCH-7F 6.0 CCP-20CF3 10.0 CCP-30CF3 12.0 CCP-20CF3 10.0 CCP-20CF3  
10.0 CCP-20CF3 10.0 CCP-20CF3 10.0 CCP-20CF3 10.0 CCP-30CF3 12.0 CCP-40CF3 10.0  
CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-40CF3  
8.0 CCP-50CF3 12.0 CCP-40CF3 8.0 CCP-40CF3 7.0 CCP-40CF3 10.0 CCP-40CF3 8.0  
CCP-40CF3 8.0 CCP-50CF3 12.0 BCH-3F.F.F 10.0 CCP-50CF3 12.0 CCP-50CF3 11.0 CCP-50CF3  
12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 ECCP-3F.F 10.0 BCH-5F.F.F 10.0 ECCP-3F.F 10.0  
ECCP-3F.F 10.0 BCH-3F.F.F 10.0 BCH-3F.F.F 16.0 ECCP-5F.F 8.0 ECCP-30CF3 10.0  
ECCP-5F.F 10.0 ECCP-5F.F 8.0 BCH-5F.F 10.0 BCH-5F.F.F 9.0 BCH-3F.F.F 8.0 ECCP-50CF3  
8.0 BCH-3F.F.F 12.0 ECCP-3F.F 10.0 ECCP-3F.F 10.0 BCH-3F.F.F 15.0 BCH-5F.F.F 12.0  
BCH-5F.F.F 16.0 BCH-5F.F.F 8.0 ECCP-5F.F 8.0 ECCP-5F.F 8.0 BCH-5F.F.F 15.0 12.0  
CCH-32CF3 10.0 10.0 CCH-52CF3 10.0 example 129 130 131 132 133 134 135 -- --  
Clearing Point [.degree.C.] +87 +75 +69 +85 +85 +85 +86 Viscosity [mm.sup.2 s.sup.-1 ]  
-- 150 -- -- 160 -- -- -20.degree. C. d .multidot. .DELTA.n (.mu.m) = 0.4 .DELTA.n  
(589 nm, 20.degree. C.) +0.0938 +0.0874 +0.1233 +0.0910 +0.0914 +0.0910 +0.0931  
n.sub.e (589 nm, 20.degree. C.) -- 1.5650 1.6236 1.5684 1.5682 1.5679 1.5709 .DELTA.  
.epsilon. (1 kHz, 20.degree. C.) -- -- -- -- -- .sup..epsilon. .parallel. (1  
kHz, 20.degree. C.) -- -- -- -- -- V.sub.(10,0,20) [V] 1.58 1.55 1.13 1.60  
n.d. 1.61 n.d. V.sub.(60,0,20) [V] -- 2.00 1.44 2.07 -- 2.07 -- V.sub.(90,0,20) [V]  
-- 2.60 1.86 2.69 -- 2.68 -- Composition [%]: PCH-5F 9.0 PCH-5F 2.0 BCH-3F.F.F 30.0  
PCH-5F 10.0 PCH-5F 8.0 PCH-5F 8.0 PCH-5F 9.0 PCH-7F 4.0 BCH-5F.F.F 60.0 PCH-7F 5.0  
PCH-7F 7.0 PCH-7F 7.0 CCP-20CF3 10.0 PCH-7F 9.0 CBC-55F 10.0 CCP-20CF3 11.0  
CCP-20CF3 12.0 CCP-20CF3 12.0 PCH-7F 5.0 CCP-30CF3 12.0 CCP-20CF3 11.0 CCP-30CF3  
12.0 CCP-30CF3 14.0 CCP-30CF3 12.0 CCP-20CF3 10.0 CCP-40CF3 9.0 CCP-30CF3 12.0  
CCP-40CF3 8.0 CCP-40CF3 9.0 CCP-40CF3 10.0 CCP-30CF3 12.0 CCP-50CF3 12.0 CCP-40CF3  
7.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-40CF3 9.0 BCH-3F.F.F 15.0  
CCP-50CF3 11.0 BCH-3F.F.F 14.0 BCH-3F.F.F 14.0 BCH-3F.F.F 12.0 CCP-50CF3 12.0  
BCH-5F.F.F 10.0 ECCP-3F.F 10.0 BCH-5F.F.F 9.0 BCH-5F.F.F 9.0 BCH-5F.F.F 11.0  
BCH-3F.F.F 15.0 ECCP-3F.F 11.0 ECCP-5F.F 7.0 ECCP-3F.F 11.0 ECCP-3F.F 8.0 ECCP-3F.F  
8.0 BCH-5F.F.F 10.0 ECCP-5F.F 8.0 BCH-3F.F.F 12.0 ECCP-5F.F 8.0 ECCP-5F.F 7.0

ECCP-5F.F 8.0 ECCP-3F.F 10.0 BCH-5F.F.F 9.0 ECCP-5F.F 8.0 example 136 137 138 139  
140 141 142 Clearing Point [.degree.C.] +87 +86 +75 +75 +62 +88 +74 Viscosity  
[mm.sup.2 s.sup.-1] -- -- -- -- -- -20.degree. C. d .multidot. .DELTA.n  
(.mu.m) = 0.4 -- .DELTA.n (589 nm, 20.degree. C.) 0.0915 +0.0905 +0.0870 +0.0876  
+0.1264 +0.1353 +0.1298 n.sub.e (589 nm, 20.degree. C.) 1.5680 1.5669 1.5645 1.5650  
1.6296 1.6370 1.6319 .DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- --  
.sup..epsilon. .parallel. (1 kHz, 20.degree. C.) -- -- -- -- --  
V.sub.(10,0,20) [V] 1.59 1.60 1.53 1.52 1.54 1.80 1.67 V.sub.(60,0,20) [V] 2.04 2.06  
1.97 1.97 1.74 2.04 1.89 V.sub.(90,0,20) [V] 2.63 2.67 2.56 2.57 2.11 2.44 2.27  
Composition [%]: PCH-5F 9.0 PCH-5F 7.0 BCH-3F.F 13.1 BCH-3F.F 12.0 BCH-3F.F 12.0  
PCH-6F 9.0 PCH-6F 7.0 PCH-6F 12.0 BCH-5F.F 20.2 BCH-5F.F 18.0 BCH-5F.F 20.0 PCH-7F  
6.0 PCH-7F 6.0 PCH-7F 7.0 PCH-7F 9.0 BCH-3F.F.F 22.7 BCH-3F.F.F 21.0 BCH-3F.F.F 23.0  
CCP-20CF3 12.0 CCP-20CF3 12.0 CCP20CF3 11.0 CCP-20CF3 11.0 BCH-5F.F.F 44.0  
BCH-5F.F.F 39.0 BCH-5F.F.F 40.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3 12.0  
CCP-30CF3 12.0 CBC-33F 5.0 CCP-40CF3 10.0 CCP-40CF3 10.0 CCP-40CF3 7.0 CCP-40CF3 7.0  
CBC-55F 5.0 CBC-55F 5.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3 11.0 CCP-50CF3 11.0  
BCH-3F.F.F 12.0 BCH-3F.F.F 12.0 ECCP-3F.F 10.0 ECCP-3F.F 10.0 BCH-5F.F.F 10.0  
BCH-5F.F.F 10.0 ECCP-5F.F 7.0 ECCP-5F.F 7.0 ECCP-3F.F 10.0 ECCP-3F.F 10.0 BCH-3F.F.F  
12.0 BCH-3F.F.F 12.0 ECCP-5F.F 7.0 ECCP-5F.F 7.0 BCH-5F.F.F 9.0 BCH-5F.F.F 9.0  
example 143 144 145 146 147 148 -- Clearing Point [.degree.C.] +73 +85 +88 +77 +84  
+84 Viscosity [mm.sup.2 s.sup.-1] -20.degree. C. -- -- -- -- -- d .multidot.  
.DELTA.n (.mu.m) = 0.4 -- .DELTA.n (589 nm, 20.degree. C.) +0.0868 +0.0927 +0.0921  
+0.1225 +0.0908 +0.0791 n.sub.e (589 nm, 20.degree. C.) 1.5637 1.5709 1.5687 1.6198  
1.5676 1.5494 .DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- --  
.sup..epsilon. .parallel. (1 kHz, 20.degree. C.) -- -- -- -- -- V.sub.(10,0,20)  
[V] 1.45 1.81 1.60 2.21 1.57 1.78 V.sub.(60,0,20) [V] 1.87 2.32 2.05 2.59 2.00 2.28  
V.sub.(90,0,20) [V] 2.43 3.02 2.66 2.98 2.59 2.97 Composition [%]: PCH-20F.F 10.0  
PCH-5F 10.0 PCH-20F.F 5.0 PCH-5F 8.0 PCH-20F.F 7.5 PCH-5F 10.0 PCH-40F.F 5.0 PCH-7F  
5.0 PCH-40F.F 5.0 PCH-6F 8.0 PCH-40F.F 5.0 CCP-20CF3 11.0 CCP-20CF3 11.0 CCP-20CF3  
11.0 PCH-7F 8.0 CCP-20CF3 11.0 PCH-7F 8.0 CCP-30CF3 12.0 CCP-30CF3 12.0 CCP-30CF3  
12.0 FET-3F 6.0 CCP-30CF3 12.0 CCP-20CF3 10.0 CCP-40CF3 8.0 CCP-40CF3 8.0 CCP-40CF3  
8.0 FET-5F 4.0 CCP-40CF3 8.0 CCP-30CF3 12.0 CCP-50CF3 12.0 CCP-50CF3 12.0 CCP-50CF3  
12.0 CFET-3F.F 8.0 CCP-50CF3 12.0 CCP-40CF3 10.0 BCH-3F.F.F 14.0 BCH-20F.F 14.0  
BCH-3F.F.F 14.0 BCH-3F.F.F 9.0 BCH-3F.F.F 14.0 CCP-50CF3 12.0 BCH-5F.F.F 9.0  
BCH-5F.F.F 9.0 BCH-5F.F.F 9.0 BCH-5F.F.F 14.0 BCH-5F.F.F 9.0 ECCP-3F.F 12.0  
ECCP-3F.F 11.0 ECCP-3F.F 11.0 ECCP-3F.F 11.0 BCH-5F.F.F 13.0 ECCP-3F.F 11.0  
ECCP-5F.F 8.0 ECCP-5F.F 8.0 ECCP-5F.F 13.0 BCH-52F 8.0 ECCP-5F.F 10.5 CBC-33F 2.0  
CCP-3CF3.F.F 26.0 CBC-53F 3.0 CBC-55F 2.0 BCCP-30CF3 7.0 example 149 150 151 152 153  
154 -- -- -- -- -- Clearing Point [.degree.C.] +82 +87 +63 +89 +80 +91 Viscosity  
[mm.sup.2 s.sup.-1] -20.degree. C. -- -- -- -- -- d .multidot. .DELTA.n (.mu.m)  
= 0.4 -- .DELTA.n (589 nm, 20.degree. C.) +0.1210 +0.1260 +0.0816 +0.0927 +0.0779  
+0.0945 n.sub.e (589 nm, 20.degree. C.) 1.6180 1.6239 1.5575 1.5687 1.5486 1.5713  
.DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- -- .sup..epsilon. .parallel.  
(1 kHz, 20.degree. C.) -- -- -- -- -- V.sub.(10,0,20) [V] 2.25 2.33 1.55 1.61  
1.64 1.71 V.sub.(60,0,20) [V] 2.56 2.63 1.99 2.07 2.10 2.18 V.sub.(90,0,20) [V] 3.09  
3.14 2.62 2.69 2.74 2.83 Composition [%]: PCH-5F 7.6 PCH-5F 7.6 PC-5F 10.0 PCH-5F  
8.0 PCH-5F 12.0 PCH-5F 8.0 PCH-6F 7.6 PCH-6F 7.6 PCH-6F 7.0 PCH-7F 5.0 PCH-7F 5.0  
PCH-7F 7.6 PCH-7F 7.6 PCH-7F 15.0 CCP-20CF3 10.0 PCH-7F 8.0 CCP-20CF3 10.0 FET-3F  
5.7 FET-3F 5.7 CCP-20CF3 10.0 CCP-30CF3 12.0 CCP-20CF3 10.0 CCP-30CF3 12.0 FET-5F  
3.8 FET-5F 3.8 CCP-30CF3 12.0 CCP-40CF3 8.0 CCP-30CF3 12.0 CCP-40CF3 8.0 CFET-3F.F  
7.6 CFET-3F.F 7.6 CCP-40CF3 8.0 CCP-50CF3 10.0 CCP-40CF3 8.0 CCP-50CF3 10.0  
BCH-3F.F.F 13.3 BCH-3F.F.F 13.3 CCP-3CF3.F.F 10.0 BCH-3F.F 10.0 CCP-50CF3 12.0  
BCH-3F.F 10.0 BCH-6F.F.F 12.3 BCH-5F.F.F 12.3 BCH-5F.F 16.0 BCH-5F.F 10.0 ECCP-3F.F  
12.0 BCH-5F.F 10.0 BCH-52F 7.6 BCH-52F 7.6 CBC-33F 1.9 CBC-33F 3.9 CCP-5F.F.F 9.0  
CCP-5F.F.F 12.0 CCP-5F.F.F 9.0 CBC-53F 2.9 CBC-53F 3.9 ECCP-3F.F 6.0 CCP-3CF3.F.F  
14.0 ECCP-3F.F 6.0 CBC-55F 1.9 CBC-55F 3.9 CCP-3CF3.F.F 12.0 CCP-3CF3.F 12.0  
ECCP-30CF3 6.7 ECCP-30CF3 6.7 CP-4F 5.0 example 155 156 157 158 159 160 -- --  
Clearing Point [.degree.C.] +82 +90 +86 +91 +88 +86 Viscosity [mm.sup.2 s.sup.-1]  
-20.degree. C. -- -- -- -- -- d .multidot. .DELTA.n (.mu.m) = 0.4 .DELTA.n (589  
nm, 20.degree. C.) +0.0776 +0.0960 +0.1379 +0.0900 +0.0945 +0.1370 n.sub.e (589 nm,  
20.degree. C.) 1.5491 1.5710 1.6417 1.5640 1.5655 1.6405 .DELTA..epsilon. (1 kHz,  
20.degree. C.) -- -- -- -- -- .sup..epsilon. .parallel. (1 kHz, 20.degree. C.) --  
-- -- -- -- -- V.sub.(10,0,20) [V] 1.73 1.66 2.19 1.65 1.59 2.05 V.sub.(60,0,20) [V]  
2.22 2.10 2.47 2.12 2.05 2.33 V.sub.(90,0,20) [V] 2.88 2.71 2.96 2.75 2.68 2.82  
Composition [%]: PCH-5F 12.0 PCH-5F 8.0 PCH-5F 5.0 PCH-50CF3 13.0 PCH-30CF3 9.0

PCH-5F 5.0 PCH-7F 5.0 PCH-6F 8.0 PCH-50CF3 6.0 PCH-6F 8.0 PCH-7F 8.0 CCP-20CF3 10.0  
PCH-7F 4.0 CCP-20CF3 10.0 CCP-20CF3 12.0 PCH-7F 4.0 CCP-20CF3 10.0 CCP-30CF3 12.0  
FET-3F 8.0 CCP-30CF3 12.0 CCP-30CF3 12.0 FET-3F 8.0 CCP-30CF3 12.0 CCP-40CF3 8.0  
FET-5F 7.0 CCP-40CF3 8.0 CCP-40CF3 10.0 FET-5F 7.0 CCP-40CF3 8.0 CCP-50CF3 10.0  
CFET-3F.F 10.0 CCP-50CF3 10.0 CCP-50CF3 12.0 CFET-3F.F 10.0 CCP-50CF3 12.0 BCH-3F.F  
10.0 CFET-5F.F 12.0 BCH-3F.F 10.0 BCH-3F.F.F 12.0 CFET-5F.F 9.0 ECCP-3F.F 12.0  
BCH-5F.F 10.0 BCH-3F.F 12.0 BCH-5F.F 10.0 BCH-5F.F.F 10.0 BCH-3F.F 12.0 CCP-3CF3.F  
9.0 BCH-5F.F 12.0 CCP-3F.F.F 12.0 ECCP-3F.F 10.0 BCH-5F.F 12.0 CCP-5F.F.F 12.0  
ECCP-3F.F 6.0 BCH-3F.F.F 6.0 CCP-5F.F.F 9.0 ECCP-5F.F 7.0 BCH-3F.F.F 6.0 CCP-3CF3.F  
14.0 CCP-3CF3.F.F 12.0 BCH-5F.F.F 12.0 ECCP-3F.F 6.0 BCH-5F.F.F 12.0 CBC-33F 2.0  
CBC-33F 2.0 CBC-53F 3.0 CBC-53F 3.0 CBC-55F 2.0 CBC-55F 2.0 example 161 162 163 164  
165 166 Clearing Point [.degree.C.] +85 +82 +93 +79 +86 +91 Viscosity [mm.sup.2  
s.sup.-1] -20.degree. C. 530 -- 590 1050 -- -- d .multidot. .DELTA.n (.mu.m) = 0.4  
.DELTA.n (589 nm, 20.degree. C.) +0.1360 +0.0928 +0.1395 +0.1375 +0.0932 +0.0937  
n.sub.e (589 nm, 20.degree. C.) 1.6395 1.5681 1.6430 1.6400 1.5682 1.5705  
.DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- -- .sup..epsilon. .parallel.  
(1 kHz, 20.degree. C.) -- -- -- -- -- V.sub.(10,0,20) [V] 2.00 1.55 2.13 1.49  
1.58 1.56 V.sub.(60,0,20) [V] 2.27 1.98 2.43 1.69 2.03 2.02 V.sub.(90,0,20) [V] 2.72  
2.56 2.90 2.01 2.65 2.61 Composition [%]: PCH-5F 5.0 PCH-3CF3 13.0 PCH-5F 6.0  
BCH-3F.F.F 30.0 PCH-5CF3 13.0 PCH-6F 8.0 PCH-6F 8.0 PCH-6F 9.0 BCH-5F.F.F 50.0  
PCH-7F 5.0 PCH-7F 4.0 CCP-20CF3 10.0 FET-3F 7.0 CFET-3F.F 10.0 CCP-20CF3 10.0  
CCP-20CF3 10.0 FET-3F 7.0 CCP-30CF3 12.0 FET-5F 7.0 CFET-5F.F 10.0 CCP-30CF3 12.0  
CCP-30CF3 12.0 FET-5F 7.0 CCP-40CF3 8.0 CFET-3F.F 10.0 CCP-40CF3 8.0 CCP-40CF3 8.0  
CFET-3F.F 10.0 CCP-50CF3 10.0 CFET-5F.F 10.0 CCP-50CF3 10.0 CCP-50CF3 10.0 CFET-5F.F  
10.0 BCH-3F.F 10.0 BCH-3F.F 10.0 BCH-3F.F 10.0 BCH-3F.F 10.0 BCH-3F.F 10.0 BCH-5F.F  
10.0 BCH-5F.F 10.0 BCH-5F.F 10.0 BCH-5F.F 10.0 BCH-5F.F 10.0 CCP-3F.F.F 12.0  
BCH-3F.F.F 12.0 CCP-3F.F.F 12.0 CCP-3F.F.F 12.0 BCH-3F.F.F.F 12.0 CCP-5F.F.F 9.0  
BCH-5F.F.F 10.0 CCP-5F.F.F 9.0 BCH-5F.F.F 10.0 ECCP-3F.F 6.0 CBC-33F 3.0 ECCP-3F.F  
6.0 ECCP-3F.F 6.0 CBC-33F 2.0 CBC-53F 3.0 CCP-5CF3.F.F 9.0 CBC-55F 3.0 CBC-55F 3.0  
CBC-55F 2.0 example 167 168 169 170 171 172 -- -- Clearing Point [.degree.C.] +91  
+81 +86 +61.5 +87 +64.5 Viscosity [mm.sup.2 s.sup.-1] -20.degree. C. -- -- -- -- --  
-- d .multidot. .DELTA.n (.mu.m) = 0.4 .DELTA.n (589 nm, 20.degree. C.) +0.0875  
+0.0841 +0.0858 +0.0637 +0.0949 +0.0652 n.sub.e (589 nm, 20.degree. C.) 1.5591  
1.5573 1.5586 1.5380 1.5672 1.5338 .DELTA..epsilon. (1 kHz, 20.degree. C.) -- -- -- -- --  
-- -- -- .sup..epsilon. .parallel. (1 kHz, 20.degree. C.) -- -- -- -- --  
V.sub.(10,0,20) [V] 1.59 1.50 1.57 2.49 1.54 1.68 V.sub.(60,0,20) [V] 2.06 1.94 2.04  
3.00 1.98 2.14 V.sub.(90,0,20) [V] 2.66 2.52 2.63 3.84 2.58 2.77 Composition [%]:  
PCH-5F 8.0 PCH-5F 10.0 PCH-5F 12.0 CCP-3F.F.F 8.0 PCH-5F 5.0 PCH-5F 7.0 PCH-7F 8.0  
PCH-7F 11.0 PCH-7F 6.0 CCP-5F.F.F 8.0 PCH-7F 6.0 PCH-7F 7.0 CCP-20CF3 10.0 CCP-20CF3  
8.0 CCP-20CF3 12.0 CCP-20CF3 8.0 CCP-20CF3 11.0 PCH-302 6.0 CCP-30CF3 10.0 CCP-30CF3  
9.0 CCP-30CF3 12.0 CCP-30CF3 .0 CCP-30CF3 12.0 CCH-3CF3 12.0 CCP-40CF3 10.0  
CCP-40CF3 9.0 CCP-40CF3 7.0 CCP-40CF3 8.0 CCP-40CF3 10.0 CCH-5CF3 12.0 CCP-50CF3  
10.0 CCP-50CF3 9.0 CCP-50CF3 7.0 CCP-50CF3 .0 CCP-50CF3 12.0 CCP-3F.F.F 10.0  
CCP-5CF3.F.F 15.0 CCP-5CF3.F.F 15.0 CCP-5CF3.F.F 15.0

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KINC	Draw Desc	Image
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## 6. Document ID: US 5368772 A

L4: Entry 6 of 6

File: USPT

Nov 29, 1994

DOCUMENT-IDENTIFIER: US 5368772 A  
TITLE: Liquid-crystalline medium

### Detailed Description Paragraph Table (5):

CCP-3F.F.F 14.00 CCP-5F.F.F 12.00 CCP-3CF3.F.F 12.00 CCP-5CF3.F.F 11.00 Example 20  
CCH-3CF3 6.00 T.sub.(N,I) = 74.degree. C. CCH-5CF3 8.00 V.sub.20 = 20 cSt CCH-501  
4.00 .DELTA.n = 0.072 CCP-2F.F 6.00 V.sub.10 = 1.37 V CCP-3F.F 12.00 CCP-5F.F 9.00  
CCP-2F.F.F 8.00 CCP-3F.F.F 12.00 CCP-5F.F.F 12.00 CCP-30CF2.F.F 12.00 CCP-50CF2.F.F

11.00 Example 21 CCH-3CF3 6.00 T.sub.(N,I) = 78.degree. C. CCH-5CF3 8.00 V.sub.20 = 21 cSt CCH-501 4.00 .DELTA.n = 0.073 CCP-2F.F 6.00 V.sub.10 = 1.4 V CCP-3F.F 12.00 CCP-5F.F 9.00 CCP-2F.F.F 8.00 CCP-3F.F.F 12.00 CCP-5F.F.F 12.00 CCP-3OCF2.F.F 12.00 CCP-5OCF2.F.F 11.00 Example 22 PCH-5F 6.00 T.sub.(N,I) = 87.degree. C. PCH-7F 7.00 V.sub.20 = 17 cSt PCH-302 4.00 .DELTA.n = 0.082 CCP-2F.F 6.00 V.sub.10 = 1,550 CCP-3F.F 10.00 CCP-5F.F 7.00 CCP-2F.F.F 8.00 CCP-3F.F.F 10.00 CCP-5F.F.F 9.00 CCP-3CF3.F.F 12.00 CCP-5CF3.F.F 11.00 CCECP-3F.F 5.00 CCECP-5F.F 5.00 Example 23 PECH-5F.F 7.00 T.sub.(N,I) = 72.degree. C. PECH-7F.F 6.00 V.sub.20 = 18 cSt CCP-2F.F 10.00 .DELTA.n = 0.088 CCP-3F.F 10.00 V.sub.10 (1st) = 1.60 V CCP-4F.F 8.00 CCP-5F.F 10.00 CECP-2F.F 9.00 CECP-3F.F 8.00 CECP-5F.F 6.00 BCH-3F.F.F 12.00 BCH-4F.F.F 9.00 BCH-5F.F.F 5.00 Example 24 PCH-5F 5.00 T.sub.(N,I) = 86.degree. C. PCH-7F 6.00 V.sub.20 = 29 cSt CCP-2F.F 8.00 .DELTA.n = 0.122 CCP-3F.F 10.00 V.sub.10 (2nd) = 2.1 V CCP-4F.F 8.00 CCP-5F.F 10.00 BCH-2CL.F.F 8.00 BCH-3CL.F.F 6.00 BCH-4CL.F.F 9.00 BCH-5CL.F.F 10.00 BECH-3F.F 8.00 BECH-5F.F 12.00 Example 25 PCH-6F 5.00 T.sub.(N,I) = 70.degree. C. PCH-301 6.00 V.sub.20 = 19 cSt CCP-2F.F 7.00 .DELTA.n = 0.104 CCP-3F.F 10.00 V.sub.10 (1st) = 1.55 V CCP-5F.F 8.00 CUP-3OCF3 12.00 CUP-4OCF3 12.00 CUP-5OCF3 11.00 BCH-3F.F.F 12.00 BCH-4F.F.F 9.00 BCH-5F.F.F 8.00 Example 26 PCH-5F 6.00 T.sub.(N,I) = 101.degree. C. PCH-302 6.00 .DELTA.n = 0.105 CCP-2F.F 8.00 V.sub.10 (1st) = 2.2 V CCP-3F.F 9.00 CCP-5F.F 10.00 CUP-2OCF3 6.00 CUP-3OCF3 6.00 CUP-5OCF3 7.00 BCH-3F.F.F 10.00 BCH-4F.F.F 8.00 BCH-5F.F.F 11.00 CBC-33 4.00 CBC-33F 4.00 CBC-55F 5.00 Example 27 PCH-5F 10.00 T.sub.(N,I) = 91.degree. C. PCH-7F 6.00 V.sub.20 = 20 cSt CCP-3OCF3 10.00 .DELTA.n = 0.096 CCP-4OCF3 4.00 V.sub.10 (1st) = 2.0 V CCP-5OCF3 9.00 CCP-3CL.F.F 10.00 CCP-5CL.F.F 9.00 CCP-3CL.F 11.00 CCP-5CL.F 9.00 BCH-3F.F 12.00 BCH-5F.F 10.00 Example 28 PCH-5F 8.00 T.sub.(N,I) = 98.degree. C. PCH-7F 6.00 V.sub.20 = 22 cSt CCP-3OCF3 8.00 .DELTA.n = 0.101 CCP-4OCF3 4.00 V.sub.10 (1st) = 2.1 V CCP-5OCF3 9.00 CCP-3CL.F.F 10.00 CCP-5CL.F.F 9.00 CCP-3CL.F 11.00 CCP-5CL.F 9.00 BCH-3F.F 12.00 BCH-5F.F 10.00 CCB-3.FF 2.00 CCB-5.FF 2.00

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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Term	Documents
(3 OR 2).USPT,JPAB,EPAB,DWPI,TDBD.	6
(L2 OR L3).USPT,JPAB,EPAB,DWPI,TDBD.	6

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**WEST**

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L1: Entry 7 of 15

File: EPAB

Jan 23, 1992

PUB-NO: DE004023107A1

DOCUMENT-IDENTIFIER: DE 4023107 A1

TITLE: Novel tri:fluoro-methoxy cyclohexane derivs. - useful in liq. crystal media for display devices

PUBN-DATE: January 23, 1992

## INVENTOR-INFORMATION:

NAME	COUNTRY
BARTMANN, EKKEHARD DR	DE
REIFFENRATH, VOLKER	DE
HITTICH, REINHARD DR	DE
RIEGER, BERNHARD DR	JP
SCHEUBLE, BERNHARD DR	DE

US-CL-CURRENT: 568/669

INT-CL (IPC): C07C,43/174; C07C 43/192; C07C 43/21; C07D 213/02; C07D 239/24; C07D 319/06; G02F 1/13; G09F 9/35

EUR-CL (EPC): C07C043/192; C09K019/30, C09K019/30 , C07C043/12 , C07C043/174 , C07C043/225

## ABSTRACT:

Novel cyclohexane derivs. are of formula (I). R1 = 1-15C alkyl or 2-15C alkenyl each opt. susbtd. by one CN or one or more F or Cl and each opt. having one CH2 gp. replaced by -O-, -CO-, -O.CO-, -CO.O- or -O.CO.O-; A1 and A2 = trans-1,4-cyclohexylene opt. with one or two non-neighbouring CH2 gps. replaced by -O-or 1,4-phenylene opt. with one or two F, Cl, Me and/or CN susbtits. and opt. also having one or two CH gps. replaced by N; Z1 and Z2 = -CO.O-, -O.CO-, -CH2.O-, -O.CH2-, -CH2.CH2-or a single bond; n = 0, 1 or 2; and m = 0, 1,2, 3, 4, 5 or 6.

USE/ADVANTAGE - The use is claiemd of (I) as components for liq. crystal media, as are also electrooptical display elements contg. such media. (I) differ from the cpds. of DE3732284 in having the OCF3 gp. attached to a 1,4-cyclohexylene rather than to a 1,4-phenylene gp. They are stable liq. crystal or mesogenic cpds. with relatively low optical anisotropy and relatively high dielectric anisotropy. Liq. crystal media contg. them show a broad mesophase range.

**WEST**

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L1: Entry 10 of 15

File: DWPI

Jan 21, 1993

DERWENT-ACC-NO: 1993-027937

DERWENT-WEEK: 199835

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TITLE: LC medium contg. cyclohexyl-cyclohexane cpd. - in mixt. of polar cpds. with positive dielectric anisotropy esp. for use in matrix

INVENTOR: PLACH, H; RIEGER, B ; SAWADA, A

PRIORITY-DATA: 1991DE-4123389 (July 15, 1991)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 4123389 A1	January 21, 1993		018	C09K019/08
DE 59209379 G	July 23, 1998		000	C09K019/30
WO 9302152 A1	February 4, 1993	G	018	C09K019/30
EP 548318 A1	June 30, 1993	G	018	C09K019/30
EP 548318 B1	June 17, 1998	G	000	C09K019/30

INT-CL (IPC): C09K 19/08; C09K 19/30; C09K 19/44; G02F 1/13; G09F 9/35

ABSTRACTED-PUB-NO: DE 4123389A

## BASIC-ABSTRACT:

Liq. crystal (LC) medium based on a mixt. of polar cpds. with positive dielectric anisotropy contains trans,trans-4-alkoxy-, -oxaalkyl- or -dioxalkyl-4'-alkyl-, -oxaalkyl-, -fluoroalkyl- or -alkenyl-cyclohexylcyclohexane cpd(s). of the formula (I): where X' = alkoxy, oxaalkyl or dioxalkyl with up to 7C; R = alkyl, oxaalkyl, fluoroalkyl or alkenyl with up to 7C. (I) are known cpds. or can be prepd. (not claimed) by standard methods.

The medium may also contain cyclohexylbenzene cpd(s). (II), 1-cyclohexyl-2-phenylethane cpd(s). (III) and/or 1-cyclohexyl-2-(4-phenyl-cyclohexyl)-ethane cpd(s). (III); diphenyl cpd(s). (V), 1-cyclohexyl-2-diphenyl-ethane cpd(s). (VI) etc..

USE/ADVANTAGE - Used for electrooptical purposes, esp. for LCDs. It is esp. useful for matrix, TN and STN LCDs. It has very high specific resistance and low threshold voltage. It also has a much higher surface tilt angle than usual, which suppresses reversed tilt domains and greatly improves the image quality. Combinations contg. (I) also have better parameters than usual and good UV stability.

ABSTRACTED-PUB-NO:

## EP 548318B EQUIVALENT-ABSTRACTS:

Liq. crystal (LC) medium based on a mixt. of polar cpds. with positive dielectric anisotropy contains trans,trans-4-alkoxy-, -oxaalkyl- or -dioxalkyl-4'-alkyl-, -oxaalkyl-, -fluoroalkyl- or -alkenyl-cyclohexylcyclohexane cpd(s). of the formula (I): where X' = alkoxy, oxaalkyl or dioxalkyl with up to 7C; R = alkyl, oxaalkyl, fluoroalkyl or alkenyl with up to 7C. (I) are known cpds. or can be prepd. (not claimed) by standard methods.

The medium may also contain cyclohexylbenzene cpd(s). (II), 1-cyclohexyl-2-phenylethane cpd(s). (III) and/or 1-cyclohexyl-2-(4-phenyl-cyclohexyl)-ethane cpd(s). (III); diphenyl cpd(s). (V),



1-cyclohexyl-2-diphenyl-ethane cpd(s). (VI) etc..

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**WEST**

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L1: Entry 13 of 15

File: DWPI

Jan 23, 1992

DERWENT-ACC-NO: 1992-033606

DERWENT-WEEK: 199205

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TITLE: Novel tri:fluoro-methoxy cyclohexane derivs. - useful in liq. crystal media for display devices

INVENTOR: BARTMANN, E; HITTICH, R ; REIFFENRAT, V ; RIEGER, B ; SCHEUBLE, B ; YOKOHAMA, K

PRIORITY-DATA: 1990DE-4023107 (July 20, 1990)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 4023107 A	January 23, 1992		000	

INT-CL (IPC): C07C 43/19; C07D 213/02; C07D 239/24; C07D 319/06; G02F 1/13; G09F 9/35

ABSTRACTED-PUB-NO: DE 4023107A

## BASIC-ABSTRACT:

Novel cyclohexane derivs. are of formula (I). R1 = 1-15C alkyl or 2-15C alkenyl each opt. susbtd. by one CN or one or more F or Cl and each opt. having one CH2 gp. replaced by -O-, -CO-, -O.CO-, -CO.O- or -O.CO.O-; A1 and A2 = trans-1,4-cyclohexylene opt. with one or two non-neighbouring CH2 gps. replaced by -O-or 1,4-phenylene opt. with one or two F, Cl, Me and/or CN susbtits. and opt. also having one or two CH gps. replaced by N; Z1 and Z2 = -CO.O-, -O.CO-, -CH2.O-, -O.CH2-, -CH2.CH2-or a single bond; n = 0, 1 or 2; and m = 0, 1, 2, 3, 4, 5 or 6.

USE/ADVANTAGE - The use is claiemd of (I) as components for liq. crystal media, as are also electrooptical display elements contg. such media. (I) differ from the cpds. of DE3732284 in having the OCF3 gp. attached to a 1,4-cyclohexylene rather than to a 1,4-phenylene gp. They are stable liq. crystal or mesogenic cpds. with relatively low optical anisotropy and relatively high dielectric anisotropy. Liq. crystal media contg. them show a broad mesophase range.